

## Language Accommodates Privacy Laws

By Nancy French  
Of the CW Staff

CAMBRIDGE, Mass. — Users faced with rewriting source code to make programs comply with the Privacy Act of 1974 may wish to consider using the high-level Privacy Language and a preprocessor under development here.

These tools allow a user to modify any program written in a conventional language such as Cobol by coding the privacy functions in Privacy Language, running the program through a preprocessor to expand the instructions and then compiling as usual.

Separating the privacy aspects of a program from its functional aspects in this way allows the user to "change and modify the privacy module as the law evolves and develops without ever touching the functional code," Robert Goldberg, who conceived the system, said.

Goldberg, who is a lecturer on computer science at Harvard's Aiken Computer Computation Labor-

atory, contends relatively simple and efficient privacy coding is needed to avoid the type of partial solutions some users are adopting to comply with amendments to the Fair Credit Reporting Act.

"Rather than actually correcting computerized records that have been disputed, some credit bureaus are merely flagging them and maintaining the new information in a separate file — perhaps on 3 in. by 5 in. cards," he explained. While this fulfills "the language of the law, it works to the disadvantage of the individual whose record is disputed by increasing the turnaround time the credit agency needs to respond to an inquiry."

If a credit agency employee can call up all the information needed for a credit inquiry from a single source such as a CRT screen or a computer printout, the agency can provide a couple of seconds response time on that inquiry, he explained.

(Continued on Page 2)

# COMPUTERWORLD

THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY

Weekly Newspaper

Second-class postage paid at Boston, Mass., and additional mailing offices

© 1975 by Computerworld, Inc.

Price: \$12/year

September 3, 1975

Vol. IX, No. 36

## Xerox Issues Statement on Phaseout to Users

By Nancy French  
Of the CW Staff

EL SEGUNDO, Calif. — In response to user pressure, Xerox issued a lengthy statement last week telling customers what they could expect during the phase-out of its computer operations.

The firm agreed to extend the cutoff date for guaranteeing to fill orders for add-on equipment and spare parts from Oct. 1 to Dec. 31, but did not budge on its earlier request for all mainframe orders by Oct. 1. Orders received after those dates will be filled only if equipment is available, according to the statement signed by Xerox Corp.'s Data Systems Division President Jack C. Lewis.

The firm noted its Model 3010 terminal, manufactured by its subsidiary, Diablo Systems, will be available indefinitely.

The company said it will announce only four more software releases — the D00 release of CP-V late this year, as scheduled; ANS-75 Fortran; the B00 release of Text; and software to enable the IBM 3780 to function as a front-end communications

processor under CP-V — all in mid-1976 as promised.

The firm has decided not to release the multiprocessing capability which was to have been provided for the 560 system, nor will it develop Cobol beyond the E05 release dated last July. Both these announcements come as a special disappointment to users who were counting on their 560s and a more extended Cobol for

multiprocessing activities scheduled down the road, according to Bill McAlpin, chairman of the Xerox user's group known as "exchange."

### Service Continues

Xerox said it intends to service equipment, including the 9 series, through July 21, 1982, "if contracted to do so. We will continue to negotiate maintenance agree-

ments limited only by our ability to serve specific locations, and that applies to both lease and purchase customers," the statement said.

McAlpin said the company's terms are "pretty good under the circumstances." But some found the answers to the Exchange group questions, prepared at its August meeting here, terse and carefully

(Continued on Page 2)

## Flaw Causes \$10 Million Welfare Error

By Edith Holmes  
Of the CW Staff

WOODLAWN, Md. — In a single day last month a programming error resulted in \$10,516,000 in overpayments to Welfare recipients, bringing overpayments in the new federal Welfare program for the nation's aged, blind and disabled to over \$403 million in its first 18 months of operation.

Last week President Ford asked the

Office of Management and Budget to review the matter and to make sure such overspending "won't be done again."

The \$10 million in overpayments went to about 15,000 people covered by Supplemental Security Income (SSI), a program initiated Jan. 1, 1974. A number of massive SSI checks, many of them running over \$1,000, caused personnel at the Social Security's Bureau of Data Processing here to search for some error.

The error was eventually traced to a faulty program instructing an IBM 370/165 and a -168 to issue checks to people as though they had been underpaid for a year, according to a spokesman for the bureau.

When asked about the nature of the programming mistake, he responded,

"Under certain conditions, some strings of instructions — just a few out of hundreds and thousands of instructions for issuing checks — won't be valid. We must have hit some of those conditions." Though designated spokesman for the Social Security Administration's (SSA) DP operation, he said he wasn't close enough to the problem to comment more specifically on what went wrong.

The SSA chased the checks with mailed notices to recipients telling them that they had been overpaid and that SSA would like the money returned, according to Robert P. Bynum, the SSA associate commissioner for program operations, including SSI.

"We did have the system under pretty

(Continued on Page 3)

## White House Still Dragging Feet On Appointing EFTS Commission

By Don Leavitt  
Of the CW Staff

WASHINGTON, D.C. — By the end of August — 10 months after legislation calling for a two-year National Commission on Electronic Funds Transfer was signed by President Ford [CW, Nov. 27] and

### Analysis

only two months before its interim report is due — the commission had not yet been named.

That paragraph appeared in *Computerworld* four months ago [CW, May 7]. Only the month, the elapsed time and the time remaining before the first report is due have been changed. The situation hasn't.

Thus far, the five commission members supposed to come from the private, non-financial public simply have not been named. And the commission chairman, expected to be drawn from these "public members," is also unnamed.

As of last Wednesday, a source at the White House press office admitted having had "a lot of calls on it here and there" but added, "We have nothing on it at this time . . . not even any paperwork, which leads me to believe it's pretty far down the pike yet."

In fact, much of the commission membership is prescribed by law. The enabling legislation provided initial funding that would have allowed some staffing to gather data even before the commission is formally convened.

But, the press office explained, naming of a commission staff is usually done by

(Continued on Page 4)

## Info 75 Courts End User

NEW YORK — Designed for end users, Info 75 will stress the applications, rather than the technology, of information systems for an expected crowd of 12,000 next week.

The conference, which opens here Monday, Sept. 8, and is scheduled to run through Thursday Sept. 11, will also hold a number of technological sessions for DP managers and others with the background to understand them.

But this year's Info is aimed chiefly at showing corporate and DP managers "how they can work together to develop new and useful information systems that will increase efficiency and reduce costs," a spokesman for

Clapp & Poliak, Inc. Management, which sponsors the conference, said.

More than 300 speakers, panelists and session leaders will address Info's 100 sessions. Running concurrently with the conference will be an exposition with 125 exhibitors in 240 booths.

The sessions are organized into four key areas: industrial, functional, DP management and technology and mini-computers in business. These four areas constitute "conferences-within-a-conference," according to the spokesman.

For example, there is a conference-within-a-conference for seven major in-

(Continued on Page 4)





EDITORIAL	
Editor	E. Drake Lundell Jr.
Associate Editor/ Technical News	Ronald A. Frank
Associate Editor/ Hardware	Victor J. Farmer
Associate Editor/ Software	Donald Leavitt
Computer Industry Editor	Molly Upton
Assistant Editor/ Systems	Patrick G. Ward
Staff Writers	Catherine Arnst
	Nancy French
	Edith Holmes
	Toni Wiseman
Chief Copy Editor	Cheryl M. Gelb
Copy Editors	John P. Hebert
	Kathleen Quinn
Photography Editor	Ann Dooley
Bureaus:	
London	Michael R. Young
Asia	Hiidetsuna Sasaki
Contributors:	
Education	J. Daniel Couger
Taylor Reports/Pro- fessional Practices	Alan Taylor
SALES	
Vice-President/ Marketing	T. Neal Wilder
Sales Administrator	Dorothy Travis
Traffic Manager	Judy Milford
Classified Advertising	Sara Steets
Market Research	Kathryn V. Dinneen
CIRCULATION	
Vice-President/ Circulation	Margaret Phelan
Assistant Manager	Barbara Jeannetti
PRODUCTION	
Manager	Lee Vidmer
Supervisor	Henry Fling

Please address all correspondence to the appropriate department at 797 Washington Street, Newton, Mass. 02160. Phone: (617) 965-5800. Telex: 92-2529.

OTHER EDITORIAL OFFICES: England: Computerworld Publishing Ltd., 140-146 Camden Street, London NW1 9PL. Phone: (01) 485-2248/9; Telex: 264737. W. Germany: Computerworld, c/o Computerwoche GmbH, 8000 München 40, Tristansstrasse 11. Phone: 36-40-36/37. Telex: 5215350. Asia: Computerworld, c/o Dempa/Computerworld Company, Dempa Building, 1-11-15, Higashi Gotanda 1-chome, Shinagawa-ku, Tokyo 141. Phone: (03) 445-6101. Telex: 26792.

Second-class postage paid at Boston, Mass., and additional mailing offices. Published weekly (except: a single combined issue for the last week in December and the first week in January) by Computerworld, Inc., 797 Washington St., Newton, Mass. 02160. © 1975 by Computerworld, Inc. All rights reserved.

50 cents a copy; \$12 a year in the U.S.; \$20 a year for Canada and PUAS; all other foreign, \$36 a year. Four weeks notice required for change of address.

Reproduction of material appearing in *Computerworld* is strictly forbidden without written permission. Send all requests to Walter Boyd.

*Computerworld* can be purchased on 35mm microfilm in half-volumes (six-month periods) through University Microfilm, Periodical Entry Dept., 300 Zeeb Rd., Ann Arbor, Mich. 48106. Phone: (313) 761-4700.

COMPUTERWORLD, INC.	
Board Chairman/ Publisher	Patrick J. McGovern
President	W. Walter Boyd
Vice-Presidents	Margaret Phelan
	T. Neal Wilder
Editorial Director	Dr. H.R.J. Grosch

POSTMASTER: Send Form 3579 (Change of Address) to Computerworld Circulation Dept., 797 Washington St., Newton, Massachusetts 02160. ac

Result of User Pressure

Xerox Issues Statement on Phaseout

(Continued from Page 1)  
worded. Even a close reading leaves many questions still unanswered, one source said.

Throughout, the document emphasized "fulfilling contractual responsibilities," but not a great deal more.

Xerox emphasized that contract questions had to be dealt with "on a case-by-case basis," since lease arrangements varied widely, and warned that a new lease would not necessarily contain the same terms.

The company's answer to the renewal question said only, "upon expiration of an existing lease, customers may execute a new lease with Xerox."

As for upgrading mainframes on existing lease, Xerox said its present policy would not change, indicating such upgrades would depend on availability of equipment and ability to "facilitate" maintenance.

On the conditions under which a customer may cancel ordered but unshipped equipment, Xerox said, again, each case is "unique" and "will be evaluated accordingly." The firm added they have no plans to initiate any more favorable lease-to-purchase terms for present lease customers.

Users were told delivery priority would continue to be based on the date of an order. The firm agreed, however, that if a user wished to place an order but not take delivery for an extended period of time, Xerox would build and invoice the equipment and charge a fee for warehousing and retesting.

As for equipment presently on order, Xerox assured there would be no slippage in delivery, promising to "continue to meet our existing standards of test and integration."

After Xerox inventory is depleted, the firm said it will arrange for users to "acquire spares and products from the firm's subcontractors who manufacture such equipment."

Custom systems such as the Communications Input/Output Controller (CIOP) will continue to be provided with the same "availability" condition planned for add-on products following Dec. 31.

Software Design Requests

Xerox has agreed to continue to process software improvement design requests — "for the period of its contractual commitment" which could be "up to seven years on some specific maintenance agreements." It would appear some users would be cut off earlier than others, a source said.

As for acquiring rights to Xerox proprietary software, the firm has announced this is "subject to negotiation" and will be handled in the same manner as comparable requests for hardware rights.

Xerox will continue to help customers modify software "subject to availability of skills" and will accept formal contracts for modification and enhancements on the same basis, the document said. Finally, the firm will give the user group's library all software still in the development stages "as is."

Xerox has promised to train users to maintain their own systems to the extent they have the staff to do so.

Tool Accommodates Privacy Laws

(Continued from Page 1)

"If, however, the file is flagged as disputed, and the information needed to fulfill a request for information is on hard copy in a remote file room, the credit agency may require as many as seven days to respond.

"This certainly penalizes the individual who has disputed his record and would seem to violate at least the spirit of the law," Goldberg said.

One reason for the delay users have seen in developing file designs that meet the requirements of privacy laws is computer experts traditionally have been more interested in security than privacy, Goldberg said.

The so-called "spook" agencies have developed very successful encryption algorithms and other security measures but "have never really had to confront the disclosure problem," he said.

Data Manipulation Verbs

Goldberg's Privacy Language consists of data manipulation verbs that enable a user to record disputed data and corrections requested by individuals as provided by the law. The data manipulation verbs include such commands as LOG, GET-comments, STORE-subject-comment and STORE-pers-correction, for example.

The verbs are patterned directly from the language of the law, Goldberg explained. For example, the LOG verb needs "the date, nature and purpose" of a disclosure to create a new LOG record.

Expansion of certain privacy-oriented verbs requires a considerable amount of detailed processing, he said. For example, under current legislation, the STORE-pers-correction verb must be able to search the LOG set for data indicating when erroneous information may have

Xerox agreed to complete and make available documentation for all systems, including the newer 550 and 560 series equipment.

Xerox also agreed to continue to update and correct documentation. But the firm has never supplied nor does it plan to supply users with such performance data as mean time between failure or mean time to repair as a planning aid.

When Xerox documentation runs out, users may reproduce it.

Finally, the firm said it will continue to honor its contractual service commitments in the area of response time and remote assists, for example.

been disseminated to other agencies and then internally invoke TRANSMIT-pers-record, for example, to apprise those agencies of the correction.

DELETE-pers, for example, must not only delete a personal record, it also should be able to delete all LOG records owned by that record that are more than five years old. Under the law, these LOG records must contain data indicating who, outside those with a need to know in the principal user agency, has accessed those records; when; and for what purpose.

Use of a higher level Privacy Language should improve the productivity of designers and programmers who are building personal information systems, Goldberg said.

In addition, since the same verbs will always be used to express the same functions, regardless of the programming language or the application, this approach vastly simplifies documentation and maintenance.

The preprocessor that translates Privacy Language verbs into the user's normal programming language statements may be used by a variety of agencies since privacy considerations are largely agency and system independent, he said.

Further, providing the Privacy Language is written properly, it "may be possible" to implement changes in the law by simply altering the preprocessor, "thus providing whatever new expansion is needed for a particular verb," he said. Then, "a common utility program could be used to alter the data base to support the new expansions."

Goldberg will speak on this subject before members of the Institute of Electrical and Electronics Engineers at their meeting at Washington, D.C.'s Mayflower Hotel on Sept. 9.

On the Inside This Week

NEWS

Study Finds DP Starting Salaries Rose 6.8% in '75	4
Catmore Files Detailed Counterpoint to IBM Motion	5
Conn. Saves \$6.1 Million by Canceling Order for CPU	6
Study Pinpoints 'Questionable' Purchase Procedures	7
Info 75 Sessions to Stress Management, Technology	8

EDITORIAL

Editorial: Hiding From Reality	10
White Hat, Black Hat: Getting Oriented	11
Taylor Report: Firm's Data Gathering Leaves Many Cold	11

SOFTWARE & SERVICES

'Scert 76' Clocks Workloads, Job Mixes, Hardware	13
'DOS Jars' Include Links to Accounting Records	14

COMMUNICATIONS

Telenet Lays Question of VANs at FCC's Door	15
Communications Courses Offered	16

TERMINAL TRANSACTIONS

Mix of Line Facilities, Gear Keeps Net's Downtime Low	18
Programmable BDTS Exercises Systems	18

SYSTEMS & PERIPHERALS

STC Adds Fixed-Disk Units	19
System Keeps Cash-and-Carry Operation Competitive	20

MINIWORLD

Nixdorf Combines U.S. Products in 8870 System	21
Mini, 'Beneficial Arson' Aid Forest Fire Research	24
System Ups Retailer's Efficiency 20%	25

COMPUTER INDUSTRY

IBM-GSA Contract Ends Sole Sourcing	27
One-Product Peripheral Firms Most Profitable: IDC	27
Wescon to Examine 'Next Thousand Days'	28
Burroughs Gives Demonstration of Pepe System	29

FINANCIAL

Net Income for Nine Months Rises 8% at HP	38
Pertec Reports Record Profits for '75	38



# Politics, Controversy Put End to Dial-A-Ride System

By Catherine Arnst  
Of the CW Staff

SAN JOSE, Calif. — Political expediency and public controversy here marked the end of a computerized public transportation system whose major fault was that it was too popular.

Dial-a-Ride, a personalized door-to-door rapid transit system serving Santa Clara County, opened Nov. 24, 1974 and closed May 9 because it attracted more riders than it was originally designed to handle. Officials had anticipated that in 18 to 24 months the systems would carry 10,000 passengers per day on 90 buses; instead, within 90 days, it was carrying 7,000 passengers per day on 40 buses.

Service became backlogged and inefficient, the county was saddled with labor disputes and lawsuits, and additional funds were nonexistent. The County Board of Supervisors reacted to these problems by voting to discontinue the service, an action termed a 'political move' by one transit official who felt local politicians didn't give the system a chance.

It took about a year for Lex Systems, Inc. to design Dial-a-Ride for the county. They based it on a similar manual system previously tested in Haddenfield, N.J.

Santa Clara's Dial-a-Ride ran on three leased Four-Phase Systems, Inc. Model 70s. The 240-square-mile county was divided into 18 service areas which were in turn sectioned off into 20 to 30 zones each.

When a phone call came in with a request for service, the address was keyed into a particular zone. The computer was programmed to scan the available buses, assign the trip to a bus in the area and calculate the time of pickup, which was passed on to the caller.

Each bus driver would call in after an assigned pickup was made. This information was keyed into the computer, erasing the assignment.

Dial-a-Ride has been tried manually in several cities on a smaller scale, but it is the type of system that "works" better as it gets bigger," according to Dr. Roy Murphy of Lex. With Dial-a-Ride, when the service grows beyond six vehicles, a computer is justified financially, and beyond 10 vehicles, it is justified statistically, Murphy said.

## Reliable System

There were no mechanical problems with Dial-a-Ride such as have plagued the infamous Bay Area Rapid Transit (Bart) system in San Francisco, and Murphy said he has "never worked with a more reliable system."

The problems with Dial-a-Ride were due primarily to the overwhelming demand from the day it started. Phone lines were clogged, with callers waiting hours to get through. This was solved with the addition of more operators and hardware to handle the calls, but there still remained the task of providing pickups for all the riders requesting one. There were not enough buses to pick up each passenger promptly, and there was sometimes a several-hour wait instead of the few minutes expected.

When Dial-a-Ride opened, several fixed arterial routes were closed. The protests from displaced riders, who claimed Dial-a-Ride did not adequately serve them, never ceased.

Also, the buses used in Dial-a-Ride were the same buses employed in some of the fixed arterial routes, and these buses were pulled off the personalized system during peak hours on the arterial. Consequently, there was no real door-to-door service provided during peak hours.

## Public Image Suffered

Because the same size buses were used for both the fixed routes and Dial-a-Ride, the service's public image suffered. The large buses often seemed to be empty or nearly empty when used in the personal-

ized service, and the public complained they were underutilized.

These unfilled buses were cost-justified because, rather than sitting idle in a garage as they do in the fixed routes, they were always on the road looking for passengers, argued Frank Lara, transit marketing officer of the County of Santa Clara.

The final blow was a suit brought by the county's eight taxicab companies charging the service was unfair competition in violation of the County Transit District Act. A superior court judge ruled in their favor and ordered the county to buy the taxi companies.

## High Cost

This would have added several million dollars to a system already running at an increasingly larger deficit. A state legislator had already blasted the high cost of Dial-a-Ride — the cost is \$4.85 per passenger, as opposed to \$.57 per passenger on fixed arterial routes — which was partly financed by state funds.

A study commissioned by the Board of Supervisors concluded that Dial-a-Ride "can work if you're willing to pay the price to make it work." The Board de-

## Overpayments Made to 15,000

# DP Flaw Causes \$10.5 Million Welfare Error

(Continued from Page 1)

tight control," Bynum explained. "The fact this could hit us in the eye like this will sharpen us really. It was an expensive lesson, but we've learned from it."

But the full lesson may not be learned for some time yet. Unwarranted payments to clients totaling \$403,798,830.74 since SSI began is apparently only a partial estimate of how much the new program has cost in overpayments, duplicate payments and payments to ineligible clients. When all have been accounted for, the total could climb as high as \$1 billion.

In addition to some programming problems, the DP bureau spokesman noted many of these payments occur because of the difficulties of keeping up-to-date records on each recipient. "Incomes, resources, property, living arrangements, assets are constantly changing in nearly every case," he said. "If a recipient wants to contest the SSA's decision to reduce his payments, that person is entitled to a legal decision on the matter before the problem can be resolved."

"We picked up on much of the overpayment in the program by conducting the required annual redetermination or recheck of the accuracy of the data fields we work with," he added.

Another spokesman for the SSA commented that the overpayment figure is really insignificant — amounting to only 3% of the total payments made under SSI since the system began. Thus far, about \$82 billion has been funneled into the welfare program serving 4.2 million.

The spokesman added that \$57 million had already been recovered by sending out smaller checks in later payments, but noted this means of recovering the funds is limited due to the rights of those covered under the program.

Bynum suggested that the overpayment figure be balanced off against SSI's underpayments, which amount to about \$35 million and which headlined many local newspapers during the first few months of the program's operation.

The balancing method has been rejected by several SSI officials as "invalid." "When we discover someone has been underpaid, we have to make it up. We rarely get money back from an overpayment," one said.

Various congressional, outside, state and federal auditors, including the General Accounting Office, are investigating the SSA computer operations and have been

cided the price was already too high and voted to discontinue it.

Lara disagreed with this decision. "It was a political move by the Board of Supervisors. They were getting a lot of heat, but we were getting more," he said.

"We needed more dollars. That's really what killed it," Lara said. "The system costs more per rider than a lot of others, but we must be ready, willing and able to cover these costs."

An official report issued by the Transportation Agency after the demise of Dial-a-Ride concurred with Lara's assessments of the costs. "The price of adequate transit services is high," it said, and added that "the viewpoint that transit should be paid for solely by the so-called 'customer' lingers on."

Lara disagreed: "The public is supportive of the idea of public transportation. We should have gone to the voters long ago." He felt the public would have been more responsive when the energy crisis was in full swing and inflation rates were lower.

"The people in Santa Clara are looking for ways to get out of their cars. They are looking for an attractive, convenient

method of public transportation," he said. "But they won't give money until they see an effective system. We didn't have much of a chance to prove that to them."

The system was not operated long enough to judge its effect in reducing the use of cars, Lara said. The consensus in the county was that its greatest effect seemed to be on the elderly, handicapped and low-income groups without access to cars.

"There were a lot of poor people and low-income people who used Dial-a-Ride," Jack Ybarra, chairman of the transportation commission, said. "Nobody really believed there were that many people who really supported Dial-a-Ride simply because they didn't go down to the board chambers to scream and holler."

The official report concluded that "politics, as a part of transit marketing, is typically regarded as a separate arena. It is not. Political accommodation is inextricably bound to technical solutions. This fact was inadequately recognized, and the problem of political passions was dismissed by technicians, professionals and politicians alike."

for the last few months.

According to a report in the *Washington Star*, John T. Walsh, chairman of a team of auditors from various states that is examining the SSI records in particular, wrote to the head of the Department of Health, Education and Welfare which includes Social Security. In his letter, Walsh said, "Many of the accounting and systems deficiencies which existed in the

first six months of the program, existed throughout the following fiscal year [1974-75] and still exist."

Also in the *Star* was the comment that, when Congress was considering SSI, its members were assured the SSA's computer operation, years of DP experience and reputation for being among the most efficiently run federal agencies would make the system work from the word go.

## Is this your money?



If you're paying over \$500 a month for software to functionally enhance DOS, you're burning up assets.

Because our DOS/RS™ package delivers all the bells and whistles for a flat five hundred a month.

Here's a sampling of what you get: Three full batched job partitions for production, plus three additional for spooling and teleprocessing. Full relocatability with core image compression. Automatic load balancing.

Resident transient and resident directory support.

Automatic volume recognition and generic assignments.

Plus, a new Power III enhanced spooling package that improves efficiency and speed.

All native DOS, fully compatible with DOS/VS. And all at one flat price.

Call your nearest Dearborn office and let us give you the full details. And hurry. This is no time to fiddle around.

# dearborn



dearborn computer leasing co. chicago (312) 671-4410  
toronto (416) 621-7060 st. louis (314) 727-7277 cincinnati (513) 771-1277

Member Computer Lessors Association



## Most Marked Growth at Small Sites

# Study Finds DP Starting Salaries Rose 6.8% in '75

By Catherine Arnst  
Of the CW Staff

NEW YORK — DP starting salaries for 1975 rose an average of 6.8% over last year, according to the findings of a recent survey by the Robert Half Personnel Agencies, Inc.

The largest increase for any job category came for DP managers at small installations, whose starting salaries rose from \$14,000 to \$16,000 to \$15,000 to \$20,000, an increase of 16.7%.

Salaries for computer operators at installations of any size, by contrast, did

not change at all.

The study, conducted annually, was based on an analysis of position requests received by Robert Half offices throughout the country. The company cautioned there is some difference between starting salaries in cities in different parts of the country, but added that difference generally is not greater than the variance in salaries between a large city and its suburbs.

Job descriptions were broken down according to size of installation — large, medium and small — and the categories

included programmers with up to one year of experience, programmer/analysts, lead programmers, system analysts, managing system analysts, operations managers, DP managers and computer operators.

### Discrepancies by Site

The salaries of programmers at large installations rose only 2%, according to the study. At medium-sized shops, salaries increased 4.3% and jumped 10% at small sites.

While the 10% increase at small installations brought those programmer's salary range up to between \$10,000 and \$12,000, the salary range at large installations was still higher — \$12,000 to \$13,500 — despite the smaller percentage increase, the survey found.

This rule held for all job categories at small installations — although salary ranges increased more by percentage points than those at medium to large installations, salary levels were lower in

terms of dollars.

The average percentage growth for each position was 11.9% for programmer/analysts, 6% for lead programmer (a position listed only for large installations), 6.5% for system analysts, 7.3% for managing system analysts, 8.6% for operations managers and 10.3% for DP managers.

A demand for highly competent employees greater than the available supply was cited as the reason for the overall increase in starting salaries by Bill Kohler, account manager for Robert Half. He called any influence the increased cost of living rate may have had minimal.

"Our company is still getting more orders than applicants, and companies have expanded their fringe benefits and salaries in order to attract competent employees," he said.

Kohler attributed the lack of change in starting salaries for computer operators to the "greater influx of entry-level people" at this position.

## Test Drive a Hardware Monitoring System Attend our Performance Measurement Workshop

If you're undecided about what hardware monitoring systems can do for your data processing operation, take our "test drive": COMTEN/Command Corporation three-day workshop on performance measurement. With you in the driver's seat (there's hands-on experience with a live system), you'll learn it all: the concepts... the do-it-yourself techniques... the management considerations... the strategies. It's a chance to try it all out for yourself before you commit your corporate dollars.

Place	Dates	Place	Dates
Washington, D.C.	September 22-24 and December 15-17	New York, N.Y.	November 11-13 November 18-20
Chicago, Ill.	October 14-16	Denver, Colo.	December 10-12
San Francisco, Ca.	October 22-24	Boston, Mass.	January 27-29, 1976
		Los Angeles, Ca.	February 3-5, 1976
		Tampa, Fla.	

Interested? Pick the site you want from our coast-to-coast selection... and write or call for information on registration and fees to:



COMTEN

2 Research Court  
Rockville, Maryland 20850  
(301) 948-8000

## NOW... the Structuring Engine

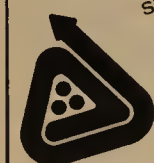
another innovative software tool from CFG, Inc. The "structuring engine" will automatically rewrite your existing FORTRAN programs into clean structured S-FORTRAN programs that are:

- easier to read, understand and verify
- cheaper to maintain and modify

The "structuring engine" is a production tool. It is being used on individual programs as well as complete projects. We can run it for you as a service. Or we can install it on your machine and let you use it on a lease basis. We would like to show you what it can do.

**Caine, Farber & Gordon, Inc.**  
1000 East Walnut Street • Pasadena, California 91106  
(213) 449-3070 • Telex 67-5436 CFG PSD

Call, telex or return coupon for "General Information" booklet.



Name \_\_\_\_\_ Title \_\_\_\_\_  
Company \_\_\_\_\_ Zip \_\_\_\_\_  
Address \_\_\_\_\_ City \_\_\_\_\_ State \_\_\_\_\_ Phone \_\_\_\_\_

## White House Still Dragging Feet On Naming of EFTS Commission

(Continued from Page 1)

the head of the commission, so...

No one in the presidential Personnel Office was available for comment on the situation. It is unclear at this time if invitations to join the commission have been sent to selected candidates and rejected by them (which seemed to be the situation in April) or if invitations have not gone out at all.

Earlier in the month, the personnel office responded to an appeal to President Ford from Jerome Dreyer, executive vice-

president of the Association of Data Processing Service Organizations (Adapso), in which Dreyer urged Ford to complete and activate the commission.

But the White House response was certainly nothing to cheer about.

In his letter — dated June 2 — Dreyer acknowledged there were "many considerations involved in the appointment of persons to important commissions," but told Ford "it is of substantial importance to our nation, and to the world, that the work of [this commission] be begun and completed at the earliest possible time."

He went on to point out Congress' mandate that the commission's work be done in two years and noted "the private sector, and many other aspects of the public sector as well, are not holding up their activities during this period."

Seventy-two days after Dreyer wrote his letter, on August 13, the presidential Personnel Office responded:

"Dear Mr. Dreyer:

"The President has asked me to thank you for your correspondence concerning the appointment of members to the National Commission on Electronic Funds Transfer.

"Your interest in making your views known is most appreciated. We are pleased that you took the time to share your thoughts and I want to assure you that your comments have been noted.

Sincerely,

Douglas P. Bennett  
Director"

## Info 75 Designed To Court End User

(Continued from Page 1)

dustrial, commercial and service areas: manufacturing, retailing, banking, insurance, hospitals and health care, transportation and public utilities.

Info 75 coverage continues on Page 8.

And there are five functional conferences-within-a-conference which cover areas common to most organizations: marketing and sales, financial, office systems, records management and telephone communications.

Sessions will run from 9 a.m. to 5 p.m. each day and will be held at the Americana Hotel.

Located at the New York Coliseum, the exhibition will be open from 11 a.m. to 5 p.m. Monday through Wednesday and from 11 a.m. to 4 p.m. on Thursday.



## Here's a nice (free) added extra:

Our latest enhancement...now the EDP-AUDITOR system comes with a greatly expanded library of audit routines.

How do you improve one of the best known and most widely used audit packages ever marketed?

Answer: make it even easier to use by providing as much of the every-day coding as possible.

Our newly-expanded library contains more than 40 commonly-used routines to help you with file footing, exception analysis, summary analysis, confirmation of

accounts, selection and sampling and special processing techniques.

Extreme power, speed and ease-of-use. Outstanding support. An active user's group. A 3-month trial plan. These are all good reasons why so many hundreds of major users have bought EDP-AUDITOR. Now there is one more.

Like the full story? Send for our newest brochure.



**Cullinane Corporation**

Wellesley Office Park 20 William St. Wellesley, Mass 02181 (617) 237 6601



# Catamore Files Detailed Counterpoint to IBM Motion

By Molly Upton  
Of the CW Staff

PROVIDENCE, R.I. — Catamore Enterprises, Inc.'s attorneys have filed a detailed, blow-by-blow counterpoint to the IBM motion asking the judgment in favor of Catamore be set aside or a new trial be held [CW, Aug. 6].

Claiming IBM's memorandum contained "inconsistencies, false presumptions, inaccuracies, gratuitous editorial comments and inflammatory remarks," the Catamore memorandum supported Judge Raymond J. Pettine's charge to the jury and asked the court to deny IBM's motion.

The Catamore filing said IBM's memorandum included "faulty premises of fact and law, is unsupported by the record of this case and [is] a misapplication of the facts of this case."

On some points, the Catamore filing claimed, cases cited by IBM in its brief were not relevant to the points IBM was

making.

In a long list of counterarguments, Catamore's memorandum maintained that the jury's verdict awarding Catamore \$11.4 million in its counterclaim was consistent with its verdict for IBM in the amount of \$68,453 for unpaid rental.

The dual awards were evidence only that the jury did not find fraud in the inducement of the Machine Services Agreement, Catamore said.

Evidence, both oral and written, supported the jury's verdict and, if anything, was on the conservative side, Catamore contended.

Catamore disputed the IBM claim that the jury's award was derived from duplicative damages and claimed all parties, including Catamore, took great care to delineate those damages that might overlap or be duplicative.

An IBM witness, George Jamieson from Price Waterhouse & Co., stated the total

amount of damages, as adjusted by him, was \$19 million, Catamore pointed out.

## Duty of Care

Furthermore, Catamore said, the court was correct in instructing the jury that the law imposes a duty of care upon IBM so that it should have warned Catamore of the dangers of converting to a computerized system.

Catamore pointed out the "assignment of a trainee and the failure to warn alone constitute two separate negligent acts or omissions, fully supported by the evidence."

In addition, "IBM's assertion that as a matter of law the software agreements were 'too vague to be enforceable' is not only absurd on the record; it is also unconscionable," Catamore said.

Catamore took IBM to task for implying "that contracts which do not contain terms limiting liability must fail. IBM

does business by attempting to limit its obligations under its preprinted form contract for hardware.

"While the vast majority of IBM's software agreements are oral, IBM attempts to avoid these oral contracts by hiding behind the parole evidence rule," Catamore said.

Parole evidence forbids the introduction into evidence of oral agreements when they are ruled to cover the same subject as the written agreements and are intended to be included in the written agreements.

The rule was not applied to the oral agreements for software and services.

"To imply that contracts must have built-in disclaimer clauses in order to be definite enough to be enforceable cuts to the very heart of that time-honored principle" by which the "law presumes that men engage in business in good faith," Catamore said.

## Attorneys Object To Name-Calling

By Molly Upton  
Of the CW Staff

PROVIDENCE, R.I. — Calling comments made by IBM counsel in its motion for a new trial [CW, Aug. 6] "scandalous," attorneys for Catamore Enterprises, Inc. have asked the U.S. District Court here to discipline the IBM lawyers who signed the document.

In addition to taking "appropriate disciplinary action," the court should impose sanctions on IBM counsel to ensure good conduct in the future, Catamore attorneys said in a motion filed with the court.

Among the signers of the IBM motion were IBM chief counsel Nicholas deB. Katzenbach and Thomas Barr, lead attorney from Cravath, Swaine & Moore, which is representing IBM in the U.S. vs. IBM antitrust case.

### Public Relations Purposes

Catamore charged IBM attorneys used the memorandum for public relation purposes. Such action was "an additional instance in a pattern of arrogance and disrespect to this Honorable Court and to its officers," the Catamore document said.

Catamore took issue with IBM's claim that Thomas K. Christo, Catamore's lead attorney, made "unfounded and scurrilous statements" during his final argument.

Catamore also objected to IBM calling Catamore President Robert Catanzaro's projections "pipe dreams."

The use of the terms "unfounded and scurrilous" was "frivolous and scandalous, and an attorney who resorts to such tactics should be disciplined."

Calling Catanzaro's projections "pipe dreams" was "completely unnecessary and demeaning to that man's business acumen," wrote Christo.

Catamore's memorandum said "this kind of allegation that counsel for the defendant in effect misled the court or knowingly lied to the court is reprehensible and should not be tolerated."

"What is obvious from reading" the press reports attached to Christo's affidavit accompanying the Catamore memo "is that the plaintiff's 'memorandum' was in fact nothing more than a device whereby the plaintiff could allay fears of certain institutional investors and the investing public in general about the implications of the jury's verdict in this case on IBM..." the Catamore memorandum stated.



## "Laborless" Day. (the day you take your TOTAL data base on-line with ENTRY ENVIRON/1)

"Laborless" days in on-line application development are commonplace with Cincom's newest product, ENTRY ENVIRON/1.

This is because the design emphasis is on "ease of use" for the organization just entering the world of on-line, data base processing.

ENTRY ENVIRON/1 makes your entry into the laborless days of Cincom data communications easy on the budget too... with rentals as low as \$275.00 per month.

ENTRY ENVIRON/1 is intended to compliment the TOTAL Data Base Management System, the leading DBMS in the world, with nearly 1000 successful installations. Together, they form the most powerful price/performance data base & data communication system available.

Take the toil out of software. Put TOTAL & ENVIRON/1 in your toolbox.

Ahh... the joy of relaxation... because:

- your current batch programmers are developing your new on-line programs in familiar COBOL.
- the special ENTRY ENVIRON/1 compiler automatically generates paged re-entrant code for maximum efficiency and performance.
- your message switching and broadcasting requirements are automatically handled.
- the drudgery of inventing sign-on, security, and I/O management routines is eliminated by a complete set of standard service programs.
- 3270 mapping support is thorough and simple to use.
- your future is secure because ENTRY ENVIRON/1 is fully compatible with its big brothers Basic and Comprehensive ENVIRON/1 (the #1 data base-oriented communication system with over 150 installations) on all 360/370 operating systems.

Take a break. Start "laborless day" today.



**Cincom Systems, Inc.**  
**We create efficiency.**

24 offices in major U.S. cities & worldwide  
2300 Montana Avenue/Cincinnati, Ohio 45211/(513) 662-2300



# Conn. Saves \$6.1 Million by Canceling Order for CPU

By Edith Holmes  
Of the CW Staff

HARTFORD, Conn. — Sloppy business practices, rather than conflicts of interest, seem to have been behind Connecticut's lease of an IBM 370/168 it didn't need.

When a study revealed the state was

## IBM Adds Products To 'Not in New' List

WHITE PLAINS, N.Y. — IBM has added several pieces of equipment to a classification known as "not in new production" since January of this year.

This is actually equipment no longer produced by IBM factories. IBM customers who place orders with their local representatives often are shipped equipment classified in this manner.

What these users receive are rebuilt units under warranty by IBM as if they were new.

They are:

- The 3158 and 3168 processing units for the 370/158 and 370/168; 3330 models 1 and 2 disk; 3333 Model 1 disk; 3830 storage control Model 2; 0129 card data recorder; 2305 Model 1 fixed-head storage; 2835 storage control Model 1; 3713 printer; 3215 console printer/keyboard; 3504 and 3505 card readers; 3525 card punch; 1035 badge reader; and the 5203 printer.

- Also the 360/195 and 370/195 systems, specifically with the following units: 3060 system console; 3080 power unit; 3085 power distribution unit; 3086 coolant distribution unit; and 3195 processing unit.

## Senate Kills Bill to Stop Parent Locator Service

WASHINGTON, D.C. — The Senate has defeated a bill to abolish the Parent Locator Service, a controversial plan that permits the Federal Government to use computerized records to locate parents whose absence has put their children on welfare.

The House had passed a measure to block start-up of the program [CW, Aug. 20]. But as a result of the Senate action, the service has gone into effect.

Established within the Department of Health, Education and Welfare's Social and Rehabilitation Service, the Parent Locator Service has been given authority to use virtually any means necessary to locate delinquent parents.

These methods include access to the files of any federal agency. They may take the form of running magnetic tape records of missing parents' names and Social Security numbers against master tapes in both the Internal Revenue Service and the Social Security Administration to find their last known address and employer.

wasting about 70% of the capacity of the 168 it had installed, officials realized the second 168, already on order from the manufacturer, was totally unjustified.

The state will save approximately \$6.1 million by not leasing the second mainframe from Systems Equipment Lessors, Inc. (SEL) in Greenwich, Conn., according to the consultants who conducted the study. The study by Systems Implementation, Inc. of Columbus, Ohio itself cost \$4,647, state officials said.

In an announcement of the actions the state planned to take, Gov. Ella T. Grasso stated no attempt had been made to acquire comparable computing power from a manufacturer other than IBM.

Connecticut leased the two mainframes from the third-party lessor in July 1974 and had since installed one of the machines. A change in administrations early this year prompted questions about the eight-year lease. Charges of conflicts of

interest and lack of need led to the study, officials said.

### Interest Transferred

Acting on the recommendations made by the consultants, the state attorney general's office entered into negotiations with SEL and recently signed an agreement transferring Connecticut's interest in the second 168 to the Manufacturers Hanover Trust Co. of New York.

Gov. Grasso has said that, in addition to canceling the contract for the second machine, Connecticut will also incorporate other suggestions made by the consultants to increase the effectiveness and efficiency of the state's DP operations (see accompanying story).

In conducting their study, the consultants determined there are a number of installations in state agencies "that result in the state paying for a considerable amount of unused computer capability."

But, users in the state's central data center and at the University of Connecticut (UConn) were concerned about inadequate response time. It seemed the hardware — two 370/155s — was being fully utilized and demands on the center appeared likely to continue to grow.

Because their central data center was to acquire the two larger mainframes, state officials then moved the two 155s to UConn.

But, the consultants reported, "these machines are also under long-term lease and, as such, represent a continuing obligation of the state. The movement of these machines to the university will clearly provide excessive computer capacity there," they added.

While they found only 30% of the capacity of the one 168 installed is being used, the consultants did say future new applications and additional users justify its acquisition.

# GREAT COMPUTER SECRETS\*



General Computer Systems, Inc.  
GCS 2100 multifunction, multimedia data entry system.  
Which we've never advertised.

## ALPHA FILES

RECORD STORAGE & RETRIEVAL

UNIQUE  
PHONETIC CODING  
TECHNIQUE

HI TOR SYSTEMS, INC.

5 Woodglan Drive, New City, N.Y. 10956



## Recommends Future Conn. Policies

# Study Pinpoints 'Questionable' Purchase Procedures

By a CW Staff Writer

HARTFORD, Conn. — Connecticut's "questionable procedures" for acquiring additional computing power included a myopic preference for IBM and a failure to protect against potential conflicts of interest, consultants conducting a study for the state indicated.

A leasing contract which put the state at a severe disadvantage, a lack of state DP personnel and a deficit which could eventually grow to undermine state DP operations were also identified by their findings.

Lessons learned by Connecticut and recommendations posed by their Ohio-based consultants, Systems Implementation, Inc., can prove instructive for other state and local DP operations as well.

The consultants urged the state and any

of its agencies acquiring DP equipment to "open their doors" to all vendors and to apply all bidding procedures to leasing companies and potential suppliers of software, system design and the like as well.

They noted vendors should receive notice of the state's intent to procure hardware or software, be given the opportunity to offer proposals, be assured their proposals will receive unbiased consideration and know what the state's needs are and on what bases the contract will be awarded.

### Disclose Interests

To protect against conflicts of interest, the consultants recommended officials involved in procurement decisions be asked to disclose any interests — ownerships, partnerships, stock holdings, consulting

relationships — which they or their immediate families have to any suppliers involved in the bidding.

The consultants questioned the kind of leases for the IBM 370/168s which the state chose to sign with Systems Equipment Lessors, Inc. (SEL).

They noted the leases contained such "significant characteristics" as balloon provisions, calling for a rental of \$42,862.50 for the first 12 months and a rental of \$75,622 for the remaining 84 months of the contract for the first 168; no responsibility on the part of the leasing company for the quality of performance of the equipment; state responsibility for any insurance and taxes; and a cost to SEL of \$4.3 million for one machine while the state would pay over \$6.8 million on the contract. Also, when

the contract expired, SEL was to receive the computer delivered at state expense.

### Hire Competent People

They also suggested the state hire competent people to handle tasks often farmed out to consulting firms.

If the state is not able to compete with private enterprise for the best DP personnel available due to low pay scales, "we recommend the state scales be adjusted," the consultants added.

They stressed the need for specific milestones and progress payments in those instances where consultants are used, noting an instance in which Connecticut contracted for the development of a payroll/personnel system, has paid over \$500,000, but has yet received little or no usable output from this expenditure.

### Improve DP Management

The consultants recommended that the state improve the level of its DP management and technical expertise by including a DP manager, a systems programmer and a systems analyst on its staff.

An advisory committee organizing the talents available within local private enterprise and a user committee composed of representatives of those agencies relying on the data center could also provide valuable forums for discussing proposed changes or possible problems, they added.

*'Officials involved in procurement decisions [should] be asked to disclose any interests... they or their immediate families have to any suppliers involved in the bidding.'*

The consultants noted indications that the revolving fund for DP will run a deficit of \$200,000 to \$300,000 during the current fiscal year. "If neither pricing policy nor projected expenditures for fiscal '76 are changed, the situation will become even worse, with revenues falling short of spending by about \$1.3 million," they said.

In addition to recommending the state not lease the second 168, the consultants suggested the center consider selling more processing to state and to outside users, making its prices for such contracting competitive and acquiring some additional state appropriations.

Any profits gained through outside contracting could be used to repay the state subsidy, for programs to maintain the center such as research and marketing and to reduce prices to the state agencies, they noted.

### Consolidate Operations

Finally, the consultants urged state officials to make consolidation of state DP operations their basic objective. They added, however, that special conditions at individual agencies should be taken into account in moving toward the goal of one or two large state data centers.

"To the extent that manual data processing is being used in cases where automatic data processing would be more efficient, the state is losing money by not spending more on DP," the consultants said in their study.

They added, though, that procedures should be recommended to avoid such "common pitfalls" as "using on-line systems where batch processing would do about as well, using teleprocessing where the mails would suffice, buying systems that convert hard copy into computer language and retrieve it as hard copy and where marginal increases in response time are being obtained at horrendous marginal costs."

For the past four years we've been developing our powerful GCS 2100 system and building its software support and service program. And we've never taken the time to tell enough people what a great system it is.

How efficient it is (average of 80% reduction in errors — 35% to 85% faster document handling).

How reliable it is (less than 1% downtime).

How simple it is (operator training time less than 8 hours).

Or how economical it is (10% — 40% savings in data preparation costs).

And our competitors have loved us for keeping it such a secret!

**The GCS 2100 is a complete data entry system:** it lets you collect and edit data at the source (data is actually edited while it is being keyed).

Store the data on disc. Then transfer the clean data to an output media like magnetic tape.

(Conversely, data already on tape or cards can be re-submitted to the GCS 2100 for editing, reformatting, etc.)

By editing input data before it goes to disc storage, the GCS 2100 lets you quickly spot errors that could have become costly.

The GCS 2100 can interface up to thirty-two Touch-Tone® telephones. Card readers. Medium and high speed line printers. Four-tape drives. Four fixed or moving head discs.

All on a single system.

The GCS 2100 provides extensive I/O functions that allow you to transfer data to and from disc storage and other I/O devices, and provides an audit trail (comprehensive statistical reports aid in monitoring the system and the operator's performance), all with minimum impact on a supervisor's time.

**The GCS 2100 can accommodate up to 64 local or remote terminals:** local terminals can be located up to 2500 ft. from the system's CPU. You get faster, more accurate data entry for functions like payroll, shipping, receiving and manufacturing, because the person most familiar with the data does the keying. (Note: we can supply a typewriter keyboard and a special CRT format so this person doesn't have to be a keypunch operator.)

In addition to data entry from local terminals, the GCS 2100 offers data entry from remote terminals (it can handle up to five remote terminals over one dedicated telephone line); Touch-Tone® data entry; remote batch communications; and word processing.

### A Programmable Extension Package (PEP)

**extends the power and the flexibility of the 2100 system:** up to 255 PEP tables provide capabilities like automatic data insertions; range and value checks; table look-ups; logical tests; character expansion (the operator keys S.D., South Dakota is generated on output); and automatic format switching.

And because these tables are not job assigned, they can be used on several different jobs. (Note: no programming experience is needed to work with PEP.)

A library of over 100 special edits is also available. It handles things like field relocation; special balancing routines; manipulation of constants; and output editing requirements. (If there isn't an edit for your needs, we can design one.)

The GCS 2100 also provides up to 99 format levels per job; up to 255 balance accumulators; variable length record and blocking factors; and up to 255 jobs stored in the system.

**GCS DataTel:** provides remote batch communications capabilities between the GCS 2100 systems and other 2780-compatible terminals and mainframes. And since the batch transmission of data is directly from disc to another mainframe, the usual step of transferring data to tape can be eliminated.

**GCS DataTone:** is a low-cost, efficient and convenient method for collecting numeric data from remote sites. It is designed for updating inventory, shipping documents, orders, etc.

DataTone answers automatically and handles up to thirty-two incoming lines at once.

With DataTone, the GCS 2100 system can accept incoming telephone data without interrupting data entry from the terminals.

**GCS DataText:** is a multi-purpose shared-processor approach to word processing. Designed for high-volume typing requirements, it is a fast, efficient, low-cost method for producing customized letters, envelopes, forms, labels and reports.

And since DataText uses a disc library, manual handling of storage media like cards, cartridges, etc. is eliminated.

If you'd like to get in on more Great Computer Secrets, contact your local representative or Tom O'Brien, Director of Domestic Sales at General Computer Systems, Inc., 16600 Dooley Road, Addison, Texas 75001. Call (800) 527-2568/9 toll free or (214) 233-5800 within Texas.

See us at info75

**GCS 2100**  
GENERAL COMPUTER SYSTEMS, INC.



## • Info 75

• Sept. 8-11

## Sessions to Stress Management, Technology

NEW YORK — Stressing the “critical interface” between DP and the rest of any enterprise, nine management and 17 technology sessions will focus on minimizing the effectiveness of people and equipment at Info 75 here next week.

Three case histories delving into the opportunities and pitfalls of computerized information systems intended to reduce an organization's overall costs will open the conference's management sessions on Monday morning, Sept. 8.

Because an ineffective information system is often the direct result of a lack of planning, one session will be devoted to the five-year-plan approach to building such systems and another to management by objectives as applied to systems development. These will be held on Monday afternoon and Wednesday morning, Sept. 10, respectively.

The conference will place considerable emphasis on the “how tos” of creating a competent information systems staff, including four sessions in its program on this topic.

The first of these sessions will deal with what the universities are doing to train

students to develop and manage information systems in business — and what they could be doing. Business executives and university and college faculty members will talk about the often inadequate preparation of graduates for business and industrial information systems careers in a panel discussion.

Following this Wednesday morning session will be two afternoon meetings focusing on how to hire and retain competent information systems personnel and the responsibilities and impact of systems programmers on the DP operation.

Finally, alternatives for maximizing the effectiveness of critical personnel assigned to various DP project areas will be treated in a session held Thursday morning.

Selling top management is a key theme in two sessions: one on achieving approval of information systems proposals and the other on building security into a modern DP center. Held on Tuesday and Thursday mornings, Sept. 9 and 11 respectively, these sessions conclude Info's offerings in the management area.

In keeping with the cost/benefit tone set by the management sessions, confer-

ence meetings under the heading “technology” will often focus on the word “trade-off.”

A two-session series on system upgrading and replacement will deal with conversion trade-offs and portability considerations, for example.

Similarly, a Thursday afternoon session will be devoted to auditing the DP installation for its cost-effectiveness; and Tuesday morning meetings to the pros and cons of centralization and decentralization and using improved technologies for applications development.

## Data Base Basics

Several of the technology-oriented sessions at Info will deal with data base concepts, systems and management. Selecting a data base management system with all the necessary evaluations and trade-offs will form the subject matter of a Wednesday afternoon session.

In addition, the implications of data base concepts for general management will be discussed by a panel from the point of view of general management on Thursday morning; the security and inte-

grity considerations for data bases will be treated on Tuesday afternoon; and the need for data base administrators to act as interfaces between DP functions and the enterprises they serve will form the basis for a Wednesday morning session.

## Communications

Three sessions will deal with data communications: one Monday morning on the design and operation of data communications and on-line systems; a second that afternoon on the reliability and performance characteristics of data communications and on-line systems; and a third Tuesday morning on the recent developments of data communications and their impact on the DP function.

Also part of Info's technology program are meetings on keyed data Wednesday morning, on the new mass storage systems Thursday morning and on executives' use of interactive graphics terminals that afternoon.

Finally, conference participants will be treated to a Monday morning discussion of the user implications of fourth-generation system architecture.

## Industry, Service, Commercial Areas Focus of Meeting

NEW YORK — Industry sessions here at Info 75 will cover seven major industrial, commercial and service areas: manufacturing, retailing, banking, insurance, hospitals and health care, transportation and public utilities.

## • Manufacturing

A plenary session Monday morning, “How Top Management Satisfies Its Information Needs to Plan and Manage a Complex Company,” will introduce this area of interest. It will be followed by two concurrent series of sessions.

Monday afternoon's “A” session will explore the development of the master schedule for accurate predictions of sales and their integration with the corporate plan to forecast production requirements. “Improving Productivity Without Fixed Capital Investment Through Planning and Scheduling,” a case study of the computerized logistics system of the Black & Decker Mfg. Co., will be given Tuesday.

On Wednesday, “Planning for the Manufacturing Capacity Needed to Meet Demand,” with papers focusing on both short-range and long-range planning, will take place in the morning, followed by discussions in the afternoon on data capture and shop floor control to assure production matches the master schedule.

The final “A” session Thursday morning will be on information systems used to monitor the progress of manufactured goods from the factory to the end user.

Tuesday morning, the “B” series will begin with talks on information technology to control the storage and routing of

semi-finished and finished goods in high productivity manufacturing facilities.

Wednesday sessions will include “Information Systems to Improve Maintenance and Control Its Impact on the Production Schedule” in the morning and, in the afternoon, talks on computer use in “Engineering the Job.”

The series will finish with “Quality Control for Economic Survival” — a session on automated testing systems for in-process inspection.

## • Retailing

Retailing sessions cover all aspects of the total information system to support executive planning and decision making in the retailing organization. “Forward Planning — Setting Goals — Establishing Strategies and Developing a Supportive Information System,” will start the series Monday afternoon.

On Tuesday, discussions on information systems in merchandise management will be held in two parts. In the morning, papers will be presented on a classification structure that will help detect emerging and down-trending businesses and exception reporting of fast-selling and slow-selling styles. Managing hardgoods and staples and big ticket merchandise will be the focus of the afternoon program.

“The Information System in the Retail Operation” and “New Technology in Sales Audit and Credit Systems” will be held consecutively Wednesday morning, and, in the afternoon, distribution and warehouse systems will be covered.

The series will conclude with “Putting It

All Together — The Total Information System” Thursday morning.

## • Banking

Seven sessions are included in this section, beginning with talks on the approaches senior bank executives have taken in satisfying the information needs of their organizations.

Tuesday afternoon will feature two concurrent sessions, “Expanded Financial Services for Growth and Greater Profitability” and “The Bay State Computer Center — A Case Study.”

Both “Cost Containment and Bank Operations Through Information Technology and Cost Reduction Planning” and “Information Systems in International Banking: A Case Study of Chase Manhattan Bank” are scheduled for Wednesday.

Thursday will be devoted to electronic and financial transfers with meetings on electronic funds transfer systems realities and strategies.

## • Insurance

The insurance sessions will start Tuesday morning with “Profitability Measurement in a Multiple Line Insurance Company — the Problem and Some Systems Designed to Present Profitability Measurements.” In the afternoon, problems of and solutions to cost control in a life insurance company will cover manpower and budgeting control and unit costs.

“Planning for the Changing Federal Pension and Insurance Environment” and “Privacy of the Individual's Data in a Life Insurance Company — Short- and Long-

Range Systems and Cost/Performance Considerations” will both be held Wednesday morning; discussions on the approaches taken by senior insurance executives to satisfy the information needs of their organizations is scheduled for the afternoon. The Thursday morning session will cover “Impact of On-Line Systems on Insurance Companies.”

## • Hospitals and Health Care

Tuesday will be devoted to “Information Systems: Rx for Health Care,” an overview of hospitals and health care organizations dealing with health information requirements while viewing such care as a business. On Wednesday, sessions will focus on maximizing information and cost-effectiveness in hospital and health agency operations in the morning and computer-based information systems in the hospital during the afternoon.

“Knowledge Management in the Hospital Library” and large and small information systems in health care will both take place Thursday morning. Afternoon sessions will center on “Auditing the Elusive Measure of Quality in Health Care.”

## • Transportation

The first in this series will be “Transportation and Electronic Data Systems” Monday morning. Afternoon talks will cover energy problems in transportation and information systems and means of alleviating them.

A series of three sessions on “Information Systems in Fleet Management” begins Tuesday morning with applications paying special attention to minis.

## • Public Utilities

These sessions will start off with a case study of Consolidated Edison Co. of New York, Inc. — “On-Line Customer Service for Nine Million People — The Need, the Payoffs and the Costs.”

Three sessions are scheduled to treat “Resource Management for the Public Utilities.” Tuesday morning will cover optimizing facilities and materials in daily operations, the afternoon will continue with long-range planning under uncertain conditions, and on Wednesday the series of meetings in this area will finish with interactive power system analysis.

A second Wednesday morning session has been planned to discuss “The Integrated MIS in a Public Utility — Features and Operating Experience of a Working System.”

## Conference to Spotlight Minis

NEW YORK — Recognizing the “new wave” of minicomputers and their applications in both small and large businesses, the sponsors of Info 75 have dedicated several sessions to these devices.

Kicking off this portion of the conference is a Monday afternoon meeting designed to introduce minis to those unfamiliar with them. An evaluation of requirements related to system and machine selection and a talk on the organizational and procedural impact of minicomputer systems will follow a presentation on what minis are and how they're being used in business today.

Tuesday will be devoted to minicomputers in manufacturing and in the office. The morning session will look at these devices as they are used in the apparel industry, the automotive industry and for factory monitoring and reporting systems. A panel discussion in the afternoon will discuss turnkey mini systems designed for office use.

Minis in distribution and minicomputer alternatives in business applications are the scheduled topics for Wednesday morning and afternoon respectively. The rationale and economics of distributed processing in national distribution organizations, the possibilities for multivendor dedicated systems in geographically dispersed distribution facilities and the relationship between distributed processing and telecommunications will be discussed.

Among the alternative uses of minis in business applications to be treated are the on-line, the intelligent terminal remote batch and the small business processor approaches.

Finally, on Thursday morning, there will be a session on the use of minis in banking, including Citibank's conversion from a large system to a minicomputer, a talk on financial display systems and a presentation on a minicomputer-based portfolio system.



# Fill this out and we'll fill you in on selling opportunities in the 1976 Computer Caravan.

To: **Roy Einreinhofer**  
National Sales Manager  
**Computerworld**  
797 Washington Street  
Newton, Mass. 02160  
(617) 965-5800

**I'm interested in the possibility of exhibiting in your 1976  
Computer Caravan. Please send me your Caravan brochure.**

Name \_\_\_\_\_

Title \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

Phone (     ) \_\_\_\_\_

If you're marketing products or services to the computer industry, you should be part of Computer Caravan/76. It's a unique selling opportunity, unmatched by any standard trade show. And when you sign up early, you'll get extra appearances in our *Computerworld* promotional advertising. For all the details, just send in the coupon. It could be your first step towards making 1976 a very good year.

## COMPUTER CARAVAN 76

BOSTON, NEW YORK, WASHINGTON, D.C., ATLANTA, DETROIT, CHICAGO, DALLAS, LOS ANGELES, SAN FRANCISCO



## Editorial

### Hiding From Reality

A recent survey confirmed a *Computerworld* finding that the majority of women in DP do not feel they are discriminated against [CW, July 23].

The survey, reported in the August issue of *Datamation*, found that overall, two-thirds of the women questioned feel they have equal status with their colleagues.

The survey of 425 women in the field showed that almost 70% of the women feel they have equal status in the area of pay, and that 66% feel they have equal status when it comes to promotions.

Furthermore, the survey, conducted by Dr. Winifred Asprey and Anne W. Laffan, found that 70% of the women felt they had a chance to hold highly responsible positions at senior technical levels of a company and that 56% felt they had an opportunity to advance to highly responsible positions in upper management.

If only it were true.

Another study, one of the few statistical surveys on employment in the field, painted a picture of discrimination that is obvious, pervasive and widespread.

Not only are women a small minority (20%) of the overall work force in the computer-user areas, compared with industry as a whole where women account for 39% of the work force, but they are systematically paid less than their male counterparts even when performing the same tasks, according to the analysis by Richard E. Weber and Bruce Gilchrist in the July *Communications of the ACM* [CW, Aug. 6].

For some reason, DP has been able to sell itself as a field where there is true equality of opportunity. And it has done such a good job that even the majority of the victims of discrimination are either unaware of it or are misled by the claims.

This probably means that the discrimination in this field is more subtle than in most and that the feeling of action, change and advancement that surrounds computers has blinded people to the actual situation.

Unfortunately this type of discrimination is hard to fight. No one feels there is a problem so it becomes difficult to find solutions.

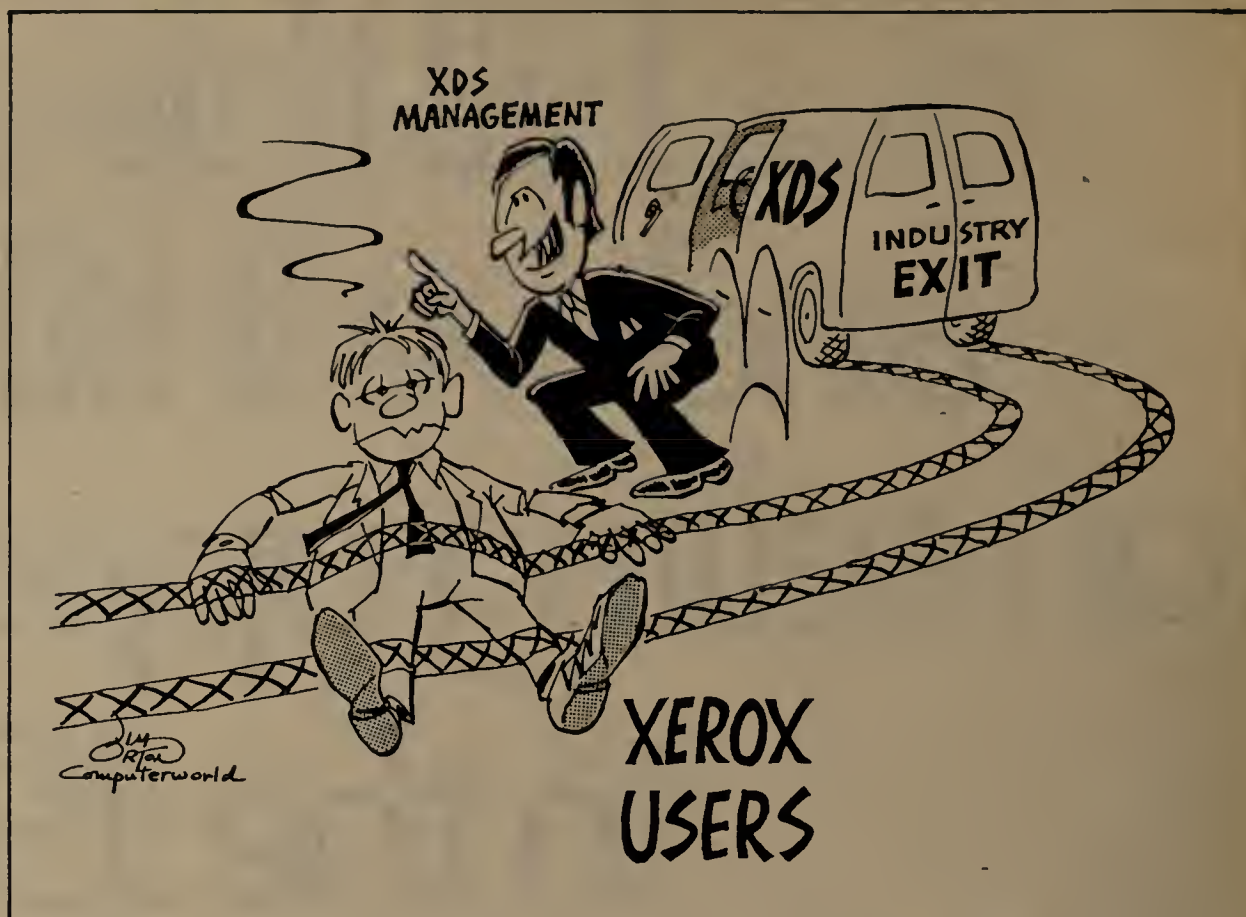
There is a problem, however. It is clear, blatant and will not go away.

All users and manufacturers should review their pay schedules carefully. There can be no justification for unequal pay between men and women who perform the same function. If there are such discrepancies in your shop — and there probably are — they should be changed — fast.

Furthermore, more organizations should begin to pay real attention, rather than lip service, to their claims of equal opportunity for advancement, because the statistics show those claims have been more hot air than substance.

Laffan is correct in her contention that "the computing field holds great potential for women."

But much needs to be done to turn that potential into reality.



*'Just Stay Calm and Don't Move Until We Decide What's Next . . .'*

## Letters to the Editor

### ACM Not Official Participant, Can't Withdraw From IJCAI

It seems to me rather deplorable journalism to write an editorial castigating the Association for Computing Machinery (ACM) for its actions (or lack thereof) on a matter in which it essentially has no involvement. I refer to the Aug. 20 editorial in which it was stated "... ACM, as one of the participants in the [International Joint Conference on Artificial Intelligence (IJCAI)], has apparently buckled under to the Soviet demands, violating its own tenets which bar participation in meetings that do not honor the International Council of Scientific Unions standards of scientific interchange."

The actual fact is that ACM has no official involvement or participation (with one minor exception noted below) in the IJCAI. As far as I know, the organizers of past and present IJCAIs constitute an informal group put together to run each meeting. Nobody has requested any official participation from ACM, and so ACM as an organization is not a participant in this conference.

The question of whether we could retroactively impose a policy passed by the ACM Council in May 1975 is thus moot. While it is true that people who are active in ACM are also active in the preparation of IJCAI, this does not create official ACM participation.

Surely you would not limit the right of a person to participate in two activities at the same time and you should not assign one organization the responsibility of activities in the other. That is guilt by association applied in the worst way.

Each person must act as his or her own conscience dictates. I presume individuals who go to this meeting in the light of the current circumstances feel it is appropriate for them to do so.

Since we can't withdraw from something in which we are not a participant, your suggestions to do so are not very constructive, and your statement that ACM is buckling under is rather insulting. In any case, trying to do anything approximately two weeks before the meeting (which is scheduled for Sept. 3-8) is impractical in an organization whose highest governing body, the Council, involves 25 individuals scattered all over the country.

Even if ACM were involved, it would not be practical to take action in a democratic fashion under those circumstances. It is interesting to note that of all the people who have exhibited concern about this meeting for a full year, none of them ever sent me a letter asking ACM to take formal action to disavow the appropriateness of the 1975 IJCAI as a technical meeting.

The exception referred to above involves the financial support to an individual who will give a talk at the IJCAI meeting identified, I believe, as

the "ACM Computers and Thought" lecture. This has been done at the two previous IJCAI meetings and is viewed as a service to the attendees and an honor to the speaker.

Following normal procedure, the relevant ACM committee chairman notified the IJCAI chairman about this early in 1974. By the time it was realized early in 1975 ACM had this minor involvement, the Executive Committee decided that it was inappropriate to take formal action to consider undoing a normal event.

The ACM Council was notified of this and nobody proposed anything different. It would be grossly unfair to the individual involved to withdraw his financial support at this time, which is the only conceivable action we could take. That would penalize one innocent person for the actions of a foreign government.

However much any individual may deplore (and I personally do) the political activities surrounding the current IJCAI in the USSR, ACM is not an official participant in IJCAI and therefore cannot withdraw from something it is not in.

Jean E. Sammet  
President

Association for Computing Machinery  
New York, N.Y.

### IBM 'Watergate' Now Unfolding

The world must be shocked and surprised at the recent announcement that IBM has been contributing to Canadian political parties for several years [CW, Aug. 13].

In the May stockholders' meeting, Frank T. Cary, chairman of the board of IBM, denied IBM had been involved in any such shenanigans. In August he sent a letter to all the stockholders and to the press indicating IBM had been involved in such practices.

Cary has assistants who watch and analyze every word he says, specifically when they are published in the annual meeting reports, to assess whether they are accurate and correct.

Why did it take Cary and all his administrative assistants, lawyers, advisors, etc. so long to finally come out with the fact IBM did support political activity in Canada?

Cary was not unprepared. No corporation with the reputation of IBM is caught unaware.

Why did it take so long for Cary's Watergate to be exposed? How many other secrets does Cary have that may come out due to public pressure in the future?

It might be a great idea to have all of the conversations of the IBM board of directors' meetings recorded on tape. Silence would predominate, since IBM produces the equipment.

Timothy Allen  
Summit, N.J.

(Other letters on Page 12.)



# Getting Oriented

To find out the future of Eastern Europe, look toward Western Europe. To find out the future of Western Europe, look toward the eastern United States. To find out the future of snow-tire U.S., look toward California.

And to find out the future of California, smog, computers, curious fads and religions, and wall-to-wall people, go to Tokyo! Which a fair parcel of Computerworlders is doing now. The occasion is the second USA-Japan Computer Conference, held at the Tokyo Prince Hotel the week of August 25. The sponsoring outfits are the American Federation of Information Processing Societies and the Information Processing Society of Japan; a sizable bunch of Americans and a horde of Japanese have turned out as expected.

I'm speaking at a private seminar being staged by Dempa Publishing, which puts out our sister paper, *Shukan Computer*. My boss Pat McGovern, Owner of Us All, is also on the program. For both of us, it beats hitchhiking!

Then there are tours of Japan and to Hong Kong, followed by the technical program, assorted social events of course, and technical tours of very considerable interest. There are also preconference tutorials on data security and microcomputers. I look forward particu-

larly to comparing the two opening speakers, one by my former head-to-header, Lew Branscomb of IBM, and the other by Bunichi Oguchi of Nippon Telegraph and Telephone, the Ma Bell of Japan. Both men are deeply research-minded, both belong to intensely paternalistic and monopolistic organizations. But East is East and West is West. Will the twain ever meet? If so, this should be the time!

There is lots of good gossip about Amdahl and Fujitsu, about the formal surrender at Xerox, about whether Mitsubishi can contribute much to the Fujitsu-Hitachi combine. There are new perspectives on character recognition, lots and lots of hardware papers, and the usual dumb goop about artificial intelligence. I've noted some Japanese contributions to library automation and to computer-managed instruction that are new at least to me.

All in all, it seems to be a great show. It doesn't match in size or scope the enormous international triennial in Stockholm last summer, and Irish Coffee is even more expensive — as is everything else! But as an opportunity to do a binational exchange, to show each side how advanced, how vigorous the other one is, it is an eye-opener.

And for good eaters there is one of the world's most exciting cuisines, and perhaps the most beautifully presented. The sushi, the tempura, the teppanyaki — and for the more adventurous, the sashimi and the shabu-shabu. Pat has already beaten me to the occasionally fatal fugu (blowfish), and its not the best or safest season anyhow.

Wonderful, also, for those of us who have already made Japanese friends, here or in Stockholm or Paris, or in Japan, is the opportunity to renew and extend those relationships. Technology is good, food is better, and friendship is great (should have written "best" but I got to thinking about the Kitcho restaurant in Kyoto)!



Herb Grosh

## System Design Unsatisfactory

# Gas Firm's Data Gathering Leaves Many Users Cold

This week's example of poor computing practice concerns the failure of Boston Gas's revenue program on its IBM 370/135 to use the information it has available. As a result of this failure, new users get an unnecessarily hard-to-read bill, and errors can

continue in the system for months without being caught, although all the necessary data to catch them is present.

It is a fact of life for Boston Gas and other utilities that inside meters cannot be read every two months regularly. Techniques are used to provide estimated bills. In the case of Boston Gas, the estimating technique is to break usage down into two parts — a basic usage and a "degree day" usage, that is, the additional amount of gas used by a customer for every day the weather is one degree colder than a preset value.

To get these two parameters, Boston Gas accumulates in the customer's records the total amount of gas used and the number of degree days the service has covered. Nothing is done with these figures, however, until two consecutive readings are made in the June to September period each year. When two such readings are made, it is assumed they represent the basic usage. With this established, the de-

gree day usage is calculated. Thus, if David Ames had used 37 units of 100-cubic feet between July 11 and Sept. 10 last year, Boston Gas would have been able to determine that his degree day usage since his service was turned on March 1 gave him a parameter of 0.003 per degree day.

Unfortunately, David Ames and the tens of thousands of other Boston Gas users were never told of the importance of the July and September readings.

Boston Gas could have told him in May, when they sent his first bill. There was space for three 70-character lines of message right on the bill, but Boston Gas did not alert Ames to the fact that estimated billing would be based upon real meter readings for this particular period.

### Different History Used

With the failure of this data-gathering system, Boston Gas fell back on another technique with which to estimate David Ames' bills. It used the parameters for the previous occupant of his apartment. Both users, in fact, appear to have the same basic usage, 18.5 units at 100-cubic ft/mo. This more than doubled the degree day parameter, making it .007, instead of what is now known to be the accurate .003.

Again, however, Boston Gas did not tell Ames this — or anything at all about how it was estimating his usage.

They could have done so, of course. The message could have been placed on the face of the

July 1974 bill telling him it had decided to use someone else's history on which to estimate his bills. But the gas company didn't do it.

Not only did Boston Gas not tell Ames about this fall-back system of estimating — it did not check whether the history it did have on Ames supported it. It could have done so, because it had actual meter readings on March 1 and May 10, 1974, a period of 2.3 months with over 1,000 degree days. This would have given a usage of round 50 units of 100 cubic feet, if the prior occupant's parameters fitted Ames. But the actual usage was only 39 units of 100-cubic feet, as the billing shows. So it was clear before Boston Gas ever started estimating Ames' usage that the secret parameters they secretly allocated to him were incorrect.

From a processing point of view, the essential error is that Boston Gas concealed its techniques from the gas users. The technique of estimating is not particularly bad, although it needs improvement and, in particular, needs to check for contraindications.

The data-gathering — that is, getting the key meter readings — however, needs to be greatly improved, particularly for the tens of thousands of new users.

The current technique of Boston Gas is simply to send out enclosed folders, asking that users entrust their keys to Boston Gas or tell Boston Gas where its meter reader will find the key hidden (under the mat, per-

haps?). Not surprisingly, this leaves many people cold.

Instead, a new-user pamphlet about the importance of getting summer readings in on time, about how to check whether parameters, etc. are correct would, used in conjunction with bill-message warnings, obviate customer dissatisfaction.

The current situation, which only came to light last month when Boston Gas obtained a real reading and then messed up the payment of the appropriate rebate to Ames, makes users feel

helpless and resentful, toward both the utility and the computer system. This is a feeling we can well do without, and a little "hot spot" designing by the computer folk at Boston Gas could easily have avoided its occurring at all.

© Copyright 1975 Alan Taylor. Reproduction for commercial purposes requires written permission. Limited numbers of copies for non-commercial purposes may be made provided they carry this copyright notice. The views expressed in this column do not necessarily reflect those of Computerworld.

**The Taylor Report**  
By  
**Alan Taylor, CDP**

WHEN MOVING PLEASE GIVE TEN DAYS NOTICE AND FORWARDING ADDRESS - AL MUJABBE. FAVOR DE AVISARLOS DE SU NUEVA DIRECCION DIEZ DIAS ANTES

144 McBride Street  
Boston, Ma 02130

**Bostongas**

FOR BILL INFORMATION  
CALL ..... 522-6000.

FOR ADDITIONAL INFORMATION - SEE REVERSE SIDE  
PARA INFORMACION ADICIONAL - LLAME 522-6000

PERIOD	UNIT PRICE	AMOUNT	PERIOD	UNIT PRICE	AMOUNT
1	2.70	2.70	1	2.70	2.70
2	3.80	7.60	2	3.80	7.60
3	2.50	7.50	3	2.50	7.50
4	2.10	8.40	4	2.10	8.40
5	1.65	8.25	5	1.65	8.25
OVER	1.45	1.45	OVER	1.45	1.45
TOTAL AMOUNT DUE 39.90			TOTAL AMOUNT DUE 39.90		

08 1290 2218 29 MAY 74

YOUR ACCOUNT NUMBER DATE

RIGHT TO DISPUTE YOUR BILL AND TO A HEARING - SEE REVERSE SIDE

WHEN MOVING PLEASE GIVE TEN DAYS NOTICE AND FORWARDING ADDRESS - AL MUJABBE. FAVOR DE AVISARLOS DE SU NUEVA DIRECCION DIEZ DIAS ANTES

144 McBride Street  
Boston, Ma 02130

**Bostongas**

FOR BILL INFORMATION  
CALL ..... 522-6000.

FOR ADDITIONAL INFORMATION - SEE REVERSE SIDE  
PARA INFORMACION ADICIONAL - LLAME 522-6000

PERIOD	UNIT PRICE	AMOUNT	PERIOD	UNIT PRICE	AMOUNT
1	2.80	2.80	1	2.80	2.80
2	3.61	7.22	2	3.61	7.22
3	2.50	7.50	3	2.50	7.50
4	2.10	8.40	4	2.10	8.40
5	1.60	8.00	5	1.60	8.00
OVER	1.60	1.60	OVER	1.60	1.60
TOTAL AMOUNT DUE 37.52			TOTAL AMOUNT DUE 37.52		

08 1290 2218 29 JUL 74

YOUR ACCOUNT NUMBER DATE

RIGHT TO DISPUTE YOUR BILL AND TO A HEARING - SEE REVERSE SIDE

The two bills above show where the Ames error started. The first bill of May '74 was based on actual usage, while the second was an estimate, based on secret parameters that the gas company had collected from a prior tenant's usage of Ames' apartment. Although there is space on the bills for appropriate warning messages about the use of these secret parameters and the need for customer assistance in gathering such data, Boston Gas made no attempt to give such messages.



Comments Remind One  
Struggle Not Yet Won

When I read Thomas Mooshammer's solution to the problem of the underpaid female in DP — less brain, less pay — based on his implication that women have less intelligence [CW, Aug. 20], I was reminded of a former spokesman of his country — same theory, only the subhuman then was the Jew. Mooshammer's comments reminded me that the struggle is far from won.

As one woman DPer who was at first told not to pursue programming (by my male boss) because it was a "technical job requiring logical thinking" and thus not a suitable field for women; then was advised, after advancing through the ranks of programming, that I should "stick with programming because detailed work was women's work" rather than pursuing a job as a systems analyst where one required an ability to "see the broad picture;" then was told my several years of systems analysis experience didn't qualify me for a systems engineering job that required long hours and excessive travel; "too tough for a woman;" then was advised to forget about a management position in DP since "men wouldn't work for women;" then was advised against accepting a marketing

Letters to the Editor

position "in the plant" because of the harsh language I would be exposed to, "clearly not an environment for a woman;" then was barred from a national sales/marketing meeting because the president of the company felt I would "disturb the dynamics of the meeting;" now what I hear is that I should consider myself lucky because women and minorities "get all the good jobs even though they are not qualified."

Barbara McLean  
Los Angeles, Calif.

Optimism Moderated  
By Male Chauvinist

I suppose *Computerworld* should be congratulated for publishing Thomas Mooshammer's attack upon the intelligence of women. It certainly served to moderate any undue optimism some of us have felt concerning the growth of human understanding or elementary fairness in employment in the computer industry.

On a more global scale, it served to remind us the land of Goebbels and Goering is still capable of producing gentlemen with equal insight into the use of

scientific methods in sociological research.

At the same time, I wonder whether the editors of CW would have printed a similar comment on a religious, racial or ethnic subgroup in the industry. The fact that the editors saw fit to treat this letter as a joke is, in itself, the strongest comment they could have made on the treatment of women by the computer industry.

John Morris  
Rome, N.Y.

Stepping Out of Line

As an inferior being, I hesitated to step out of line and respond to the feeble mutterings of Mr. Continental European himself, Thomas Mooshammer [CW, Aug. 20]. However, my fighter's instinct (I undoubtedly have confused genes) rose to the fore to voice protest.

Goodness me — could it be that all these years in DP nobody has realized I must be less intelligent than all those around me, mostly men?

Perhaps I should resign, stay home and raise a tribe of baby boys.

Eileen Yardi  
Goleta, Calif.

More Help, Please

The letter from Eric Weiss in the July 16 issue expressed the opinion that draft 12 of the PL/I standard is too abstract. Indeed it is — for the average PL/I programmer. However, the standard is not the programming language manual or a training document for an application programmer.

Weiss made the valid point that standards should be understandable and precise. The proposed standard was cited as being incomprehensible unless one first learns the special metalanguage, almost without reference to any prior knowledge of PL/I.

Unfortunately, Weiss did not identify who the reader of a standard should be. The primary audience should be the implementor and the various collections of PL/I experts in such places as the Share PL/I project. If the standard is also readable by the general public, it may be better, as long as ambiguity does not creep in to provide readability.

A few hours (or days) spent on the first chapter of the standard will clarify the metalanguage to any experienced PL/I user. Parts of the standard are particularly useful and relatively easy to read.

I hope someone can write a layman's introduction to standard PL/I for a more general audience. However, the need for such a book should not detract from the beauty of the definition of PL/I as one tree.

Wayne Compton  
Dhahran, Saudi Arabia

PL/I Not Unusual

In my letter I objected to the proposed standard for PL/I because it was stated in such an abstract and algorithmic fashion as to be virtually incomprehensible.

In commenting on my letter, T.M. O'Leary and Dennis R. Allison [CW, Aug. 13] took the position that the basic issue is whether a programming language standard should be addressed to the implementor of the language compiler or the user of the language, the implication being that the implementor could understand the standard as proposed, whereas the user could not.

In my view, this is not the issue. Everyone will agree it would be ideal if a standard could be made clear and precise to everyone concerned. Therefore, the issue is whether it is possible to write a programming language standard clearly and precisely in a language and in a form which is understandable without resorting to an abstract and specially created metalanguage.

Certainly the committee members did not feel they were capable of clear and precise expression of the standard in English. I consider this to be an admission of inadequacy on their part and the appropriate action by the computing community is to reject the standard as incomprehensible and to charge and challenge the committee to produce a comprehensible one.

The creation of standards and

their acceptance is a matter of significance to all of us. This standard, if adopted, will harm the general acceptance of PL/I and, as a precedent, will harm future language standardization efforts and standards.

Since the public comment period has ended for the draft standard [CW, Aug. 20], further public discussion may be academic. The Ansi X3 committee will consider the comments it has received, act on them as seems appropriate and prepare a final standards document for the approval cycle.

Consequently, the only actions open to those who might oppose the standard in this form is to convince their representatives on the standards approval bodies that approval should be withheld. Again, I urge those concerned to do so.

Eric A. Weiss  
St. Davids, Pa.

Simplicity the Issue

The response to my request for information on the Cobol Report Writer [CW, June 18] has been highly stimulating.

The many informative letters printed in *Computerworld* have greatly broadened my outlook on the subject. My thanks to all those who have shared their thoughts on the topic.

Informative as these comments have been, I still plan to explore the Report Writer further. To this end, I would like to solicit detailed comments from programmers who are interested in Report Writer and who want to see the features improved. These should be addressed to me at: 1225 Sussex, No. 401, Montreal, Quebec, H3H 2A2, Canada.

My ultimate goal, should time and resources permit, is to compile and distribute a small handbook of Report Writer programming tips.

All comments are welcome, be they experiences, tips, techniques, pitfalls or what have you.

William B. Simmons  
Montreal, Quebec

Not at All Astounding

The Aug. 13 issue contained yet another "astounding" software innovation by IBM. The announcement was entitled "IBM On-Line Payroll System Uses Two 3270s."

I wonder, what could possibly be the reason for anyone publicizing an on-line system, performing one function, requiring 150K and capable of handling only two terminals?

Long ago we provided such software for all IBM systems in no more than 49% the core requirements. In addition, the same core allocation would include 10 times the terminals, 3270 mapping, remote and local, full data base techniques, etc.

I don't question IBM's reason for publicizing any software they might evolve. However, since CW is the most widely circulated source of DP technology, I feel it would be its responsibility to notify its readers of other "popular packages" with a "packaged warranty."

Paul D. Doolan  
Systems Engineer  
Cincom Systems, Inc.  
Los Angeles, Calif.

There are many  
performance evaluation tools...  
How do you decide  
which to use first?

It doesn't require a lot of money or complicated techniques to get started. The table at the right provides a good common sense approach.

Look at the bottom two rows. It is easy to see why over 400 computer installations are already using the Johnson Job Accounting Report System as the cornerstone of their performance evaluation programs. If you are a cost conscious manager, who must get the largest improvement for the minimum expenditure of dollars, job accounting has to be your first choice.

PERFORMANCE EVALUATION TOOL SELECTION GUIDE					
If you have this system	Use These Tools				
	Job Accounting	Software Monitor	Small Hardware Monitor	Simulator	Large Hardware Monitor
370/125	✓				
370/135	✓	✓			
370/145	✓	✓	✓		
370/158	✓	✓	✓	✓	
370/168	✓	✓	✓	✓	✓
Cost	\$5,000	+\$10,000	+\$15,000	+\$30,000	+\$50,000
Added Performance Improvement	20%	+10%	+10%	+5%	+5%

The Johnson Job Accounting Report System supports:  
OS, VS1, VS2, DOS, DOS/VS, and POWER/VS.

To get your P/E program off to a fast,  
cost-effective start, contact Johnson TODAY!

JOHNSON  
SYSTEMS, INC.  
1651 Old Meadow Road  
McLean, Va. 22101  
(703) 893-8700

NAME \_\_\_\_\_

TITLE \_\_\_\_\_

COMPANY \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_

ZIP \_\_\_\_\_ TELEPHONE \_\_\_\_\_

COMPUTER \_\_\_\_\_ OPERATING SYSTEM \_\_\_\_\_



## 'Scert 76' Clocks Workloads, Job Mixes, Hardware

By Don Leavitt  
Of the CW Staff

ROCKVILLE, Md. — The Scert 76 package now available from Compress enables users to simulate and, therefore, evaluate proposed system acquisitions, modifications to current configurations and anticipated changes in workloads for their systems.

Scert 76 produces cost/performance projections for any workload on any hardware software configuration, the vendor claimed. Users would find the projections useful in the areas of feasibility analysis, hardware selection, software selection and system design optimization, a spokesman suggested.

Implementation planning, configuration

optimization and workload growth analysis could also benefit from Scert-based studies, he said.

The update is said to include support for automatic modeling, along with a versatile simulation language and a built-in library of performance factors. The standardized reports normally provided can be extended to include user-defined formats.

Scert 76 is organized into six modular subsystems. The 90K Scribe input management system backs initial organization of all input data on a presimulation library of workload models — generated manually or automatically — and hardware configuration models.

Scribe also includes a factor library, a separate data base of hardware and software performance specifications. A systems-oriented language aids users in the manual definition of workload models,

including model validation.

Working with job accounting data such as IBM's SMF output, the Scamp automatic modeling subsystem generates simulation-ready models of a user's workload and passes them to the presimulation library. It also generates analytical data describing the workload.

Data gathered by a hardware monitor can be input to Scamp at the user's option to provide "live" information leading to more accurate models, Compress noted.

The Score throughput analysis subsystem — in essence, the old Scert package — provides two separate simulation capabilities. The first is a discrete workload scheduling simulator that portrays the progress of any workload from input queue through execution to completion.

The Score algorithms are said to provide representations of almost any operating environment, including multiprogram-

ming, multiprocessing, discrete real-time, direct access mapping, time-sharing, paging, virtual and hierarchical situations.

A statistical technique also available under Score is useful for communications environments including queue-point analysis, resource utilization and expected response time throughout the communications net, Compress added.

A mix analysis subsystem called Scale is described by Compress as a new concept in performance simulation. It is said to use models created under Score to provide a detailed analysis of any number of programs running under a fixed environment, pinpointing contention problems and optimizing job mixes.

The Scout reports management subsystem controls the postsimulation library and production of standard and user-defined reports.

A data base design analysis subsystem originally developed to work with IBM's IMS, Scims is currently being extended to work with most of the generalized data base systems on the market and is not yet available.

Written in Cobol

Much of Scert 76 is written in Cobol so it can be used on a range of CPUs, including IBM 360s and 370s, Univac 1100s and Series 70s, or NCR Century 200s.

Although Scims (the now delayed data base analysis subsystem) and Score require 150K or more memory, the smaller modules of the system can be run on any user machine with results moved to a big system when it is available.

Scert 76 is available now for \$28,000 for a one-year term, \$38,000 for two years or \$58,000 for three. Training, field support and updates are included in the cost, Compress said from Two Research Court, 20850.

## VCI Enhances Two Packages

CHERRY HILL, N.J. — IBM DOS and DOS/VS installations can now consider a series of enhancements to two packages from Value Computing, Inc. (VCI).

Both System 1 — for job-accounting and hardware-performance reporting — and Comput-a-charge — for hardware utilization and accounting — have been improved, the vendor said.

Included in the modifications for the DOS shops are a periodic report program, an expanded daily job activity listing, a daily shift summary and an expanded daily shift report.

The periodic report program provides on a weekly, monthly, quarterly and year-to-date basis, and in graphic format, allocation times for "pooled" devices — peripherals which may be shared by and attached to more than one computer.

The daily job activity report has been expanded to include both partition identifications and number of phases processed, VCI said.

A daily shift summary has been added to provide upper management-level information including prior week and month daily averages for such things as runtimes, number of jobs handled and idle times, by shift.

The daily shift report provides an overview of a full day's production and an analysis of each shift's operations. This report has been expanded to break out jobs into as many as eight categories, such as production work, tests, reruns and abnormal terminations, and to show number of jobs, elapsed time and percentage by shift.

Current users will be provided the updated versions free; the packages are available to new users for \$5,500 (for System 1) and \$7,500 (for Comput-a-charge).

VCI is at 300 VCI Building, West Marlton Pike, 08034.

## Multuser/Multithread Option Now Available for System 2000

AUSTIN, Texas — IBM OS- and OS/VS-1-oriented users of the System 2000 data base management system can now add flexibility to their environments with a multuser/multithread capability just released by the System 2000 vendor, MRI Systems Corp.

The multithread feature works in conjunction with the multuser capability and is designed to support installations where teleprocessing or batch demand rates exceed the throughput capabilities of the standard single-thread system, MRI said.

The multithread feature queues transaction input and user output and controls the concurrent processing or multiple System 2000 updates and retrievals, the company explained.

The number of threads is user-controlled and is based on demand rate, core availability and peripheral storage considerations. Currently the feature can support 16 users in nine concurrent processing threads, MRI said.

The primary design objective of System 2000 multuser with multithread is optimal utilization of resources, the most critical resource being time. System 2000 creates minimum control program overhead and facilitates control of sharable resources, including those involving external devices, user tasks or sharable System 2000 resources, the company said.

Safeguards against deadlocks — which might occur if multiple concurrent users attempt to update the same data element — are built into the multuser/multithread logic.

The number of threads, users, buffers, shared work files and concurrent data bases to be handled by a given system generation is established at initialization time. If the multithread feature is not installed at a site, the multuser capability operates in a single-thread environment.

The multuser/multithread feature is currently available for IBM 360/370 hardware under OS/MFT, OS/MVT and OS/VS1. It costs \$20,000 in addition to the \$30,000 charged for the basic System 2000 package itself.

MRI can be reached through P.O. Box 9968, 78766.

## Data Listed, Cross-Referenced

NEW YORK — The Automatic Data Dictionary from Base Information Systems, Inc. simplifies control and maintenance of programs and data elements used in an installation's systems as well as maintenance and updating of associated documentation.

Using programs written in "virtually any Assembler or higher level language" as input, the dictionary is capable of generating a range of indexes and thesauri at the user's option.

The output cross-references programs and data in nearly any way an installation might find useful, Base said.

A user can determine, for example, what modules an entire application system contains or — by contrast — what systems use a given module. The dictionary can also show what systems or what modules use a given data element.

Other output possibilities would indicate what files are used in a system and what the specifications of a given file are. The variety of output should ensure users can anticipate the effect a change in a data element, a file or a module might have throughout an installation.

The software is both machine- and language-independent and can be adapted by Base to function in various hardware and software environments, the vendor claimed.

Currently installed on both IBM 360 and 370 CPUs under DOS, the dictionary utilizes 80K bytes of main storage, four tapes and a disk on the 30, Base said.

Purchase price is from \$10,000 to \$15,000, depending on options selected, and the package is currently available in object form from Base at Suite 1850, 380 Madison Ave., 10017.

## MMS General Ledger makes Financial Reporting look easy.



Giving everyone the financial reports they need, when they need them, exactly as they want them is easy if you use the MMS GENERAL LEDGER. It's the most powerful ledger on the market and it's hard at work for more than 200 leading corporations around the world.

Best of all, MMS GENERAL LEDGER is totally flexible, operating under DOS, O/S, IMS, DL/1, IDMS, even TOTAL.

Get the World's No. 1 General Ledger. And watch your financial reporting capability soar to new heights!

I'd love to get my financial reporting capability off the ground. Please send me more information on your...

☐ General Ledger ☐ Accounts Payable ☐ Accounts Receivable  
☐ Payroll

name \_\_\_\_\_ title \_\_\_\_\_ system \_\_\_\_\_  
company \_\_\_\_\_ street \_\_\_\_\_  
city \_\_\_\_\_ state \_\_\_\_\_ zip \_\_\_\_\_ phone \_\_\_\_\_

**SOFTWARE  
INTERNATIONAL**

Elm Square, Andover, Mass. 01810 (617) 475-5040

New York (914) 332-0040 Chicago (312) 729-7410 Atlanta (404) 255-0039  
San Francisco (408) 371-0331 Los Angeles (213) 795-4256 Toronto (416) 862-0521



## 'DOS Jars' Enhanced to Include Links To Accounting Records From Power/VS

McLEAN, Va. — Managers of IBM DOS sites and their end users can gain insights into how their system is working — and what the work is costing — with the latest version of the DOS Job Accounting Report System (DOS Jars II) from Johnson Systems, Inc.

An enhanced version of the original Johnson Systems' package that utilized data collected by the Job Accounting module of DOS by IBM's Power, Universal Software's DOS/Asap or Software Design, Inc.'s Grasp, DOS Jars II now also interfaces

with the event-oriented accounting file introduced by IBM with Power/VS.

Paging rates by job, program, partition "and even time of day" will be available to users through this newest interface. So will job turnaround statistics, measurement of I/O queue times, remote job entry line usage and utilization trend analysis for operations management, Johnson said.

Other enhancements in DOS Jars II include support for debit and credit entries, a budget control feature, selection and rejection of accounting records based on user-defined criteria and the ability to bill different jobs and job classes using different rate algorithms.

Version II also includes more than 50 new computations to determine such things as average CPU time, average elapsed time and a range of I/O indexes which are available for display on user-defined reports.

With the capabilities now in DOS Jars II, users are said to have better cost control logic than available previously and good support to evaluate soft-

ware and hardware changes.

Specific application areas in which DOS Jars II can provide effective cost control and evaluation of hardware/software changes include, in addition to job accounting, budget control, resource utilization analysis, throughput analysis and job scheduling, a Johnson source suggested.

DOS Jars II can be run under DOS and must be under DOS/VS in order to utilize the Power/VS interface. Since the package generally uses preexisting data collection routines, the only storage requirements it has are during data reduction and reporting steps, and those are minimal, the vendor said.

DOS Jars II is available for \$3,000. The Power/VS Interface costs an additional \$1,000. Johnson Systems is at the Grant Building, Westgate Research Park, 22101.

## 'Safeguard II' Eases Security Burden

ALBANY, N.Y. — IBM 360/370 users working under any of the current operating system environments may find data encryption/decryption less of a system burden than before with the Safeguard II package now available from Computer Linguistics, Inc. (CLI).

Safeguard II is a significant extension over its predecessor because its code is both reentrant and relocatable, CLI said. Thus a single copy of the program logic may be resident and shared by multiple users simultaneously.

Both the new and the old Safeguard packages utilize nonlinear encryption algorithms, and knowledge of the specific encrypting key is required. Even detailed knowledge of Safeguard's logic and an accurate picture of the encrypted text is not enough to break the cipher.

## NCI Upgrades Data Base Utility

ATLANTA — Users of Cincom Systems' Total data base management system will find more capabilities to support their data base operations in an updated version of the Total Utility Maintenance System (Tums) now available from National Computing Industries (NCI).

With Tums Version 3, users can operate in batch or multiple-step processing mode. The utility will consecutively process any number of functions on as many data sets within a data base as desired in a single pass, NCI claimed.

Tums 3 prints a job-accounting report at the end of each job step. The report shows the date; start, stop and elapsed time; return code for OS users; and counts of good, error and total records.

For DOS users, Tums is said to be capable of processing any number of blocked or unblocked input or output tape files in sequence without rewinding at end-of-file markers. This allows the user to process multifile volumes, NCI noted.

The series of potential error messages generated by Tums 3 is more extensive than with prior versions of the utility. There are now more than 100 such messages, but the routines that produce them require only 2K bytes of memory, a spokesman added.

Tums 3 is said to support all current versions of Total for both DOS and OS installations. The user's version of Total is now a parameter in the CALL to Tums and, since it is user-accessible, installations operating with two versions of Total gain, in effect, two utility packages in one, NCI said.

Purchase price of Tums 3 is \$3,450, the vendor said from 6075 Roswell Road, 30328.

DID YOU KNOW WE OFFER A MORE FLEXIBLE ALTERNATIVE TO TAPE MANAGEMENT THAN EPAT?

IT'S CALLED

**TFast**

**OXFORD**  
Software Corporation

1567 PALISADES AVENUE  
FORT LEE, N.J. 07024  
201-944-0083



"BOSS" — Basic On-line Security System

CICS  
"BOSS"  
PREVENTS  
UNAUTHORIZED  
ACCESS TO  
YOUR SYSTEM

1. Provides complete "Password Security." When the operator signs on via the terminal message, CSSN, a formatted screen is displayed. This screen allows an operator to key in the Password and Name without them appearing on the screen. These vital security elements remain invisible at all times.
2. Prevents more than one operator from being signed on to a terminal at any point in time!
3. Prevents an operator from being signed on to more than one terminal at the same time!

Our "Boss" will not affect your operating system, CICS or your application programs. TelTech provides complete source decks, JCL and documentation.

30-Day FREE TRIAL — Total Cost — \$175.00

For Free "Boss" Trial or Brochure and information about other products and services, write:

TELECOMMUNICATIONS TECHNOLOGY CORP.  
Pan Am Building 200 Park Ave., Suite 303 East  
New York, New York 10017  
(212) 682-4140

Can a Fortune-100 company that builds kitchen ovens, missile systems, freezers and nuclear power plants give you state-of-the-art intelligent terminals, too? You bet your CRT it can.

# THE WORD IS GETTING AROUND.

INTELLIGENT TERMINALS, MINICOMPUTERS AND TELECOMMUNICATIONS SYSTEMS

**RAYTHEON DATA SYSTEMS**

MARKETING DEPT., 1415 BOSTON-PROVIDENCE T'PIKE, NORWOOD, MA 02062 • 617-762-6700

**RAYTHEON**

OAK BROOK, Ill. — IBM OS and OS/VS users are relieved of the need to analyze and then act on reports of disk-oriented data set usage with Version 3 of Panda, the disk analysis and data set management package available from Pansophic Systems, Inc.

The older Panda was a "super-list" volume table of contents (VTOC) utility, in the vendor's words, but Version 3 now performs many of the chores its reports show are needed.

The user has override capabilities, however, for situations where an otherwise reasonable housekeeping action might be inappropriate.

Panda 3 will now scratch or uncatalog any data sets that have run past their retention cycles or do not conform to user-defined data set naming conventions.

The latest Panda will check partitioned data sets (PDS) to see if compression is needed and, if it is, will proceed to perform the compression. The system will bypass those PDS that don't need to be compressed, the spokesman emphasized.

For protection against system malfunctions while compression is underway, Panda 3 temporarily copies each PDS to be compressed, releasing the copy only after the compression has been successfully completed, he added.

As part of its track map func-

tion, Panda 3 informs the user of inaccurate Format 5 labels and utilizes operating system software to reclaim the space.

In addition to the previously available disk use reports by user, track and volume, an operator can specify multiple volumes to be put onto one report.

Other features of the Panda update include support for the latest IBM OS/VS release and for the IBM 3340 data module, as well as Model DSCB support.

On a perpetual license, Panda 3 is available for \$2,400.

Pansophic is at 709 Enterprise Drive, 60521.

**8080-Based Systems Gain Multitask 'Exec'**

PONTIAC, Mich. — Tri-Systems Engineering Co. has a multitask real-time executive program for Intel 8080-based micro-computer systems.

The executive, called MTE-80, is said to provide for easy implementation of complex sequencing and scheduling problems, a capability previously found only on larger minicomputers and up.

Features of the \$850 MTE-80 include interrupt I/O for standard peripherals, a set of exec functions and a feature to allow time-sharing between active tasks, Tri-Systems said from 2312 Greenlawn Ave., 48053.



## Telenet Lays Question of VAN Regulation at FCC's Door

By Ronald A. Frank  
Of the CW Staff

WASHINGTON, D.C. — Now that Telenet has begun operation of its packet-switched common carrier service, users can make some evaluations of the cost of this type of "value-added network" (VAN).

Although Telenet is the first regulated VAN, Tymshare has operated a similar service for some time on a nonregulated basis. The major difference in the two approaches is that Telenet customers pay their charges under a tariff filed with the Federal Communications Commission

### Analysis

(FCC); Tymshare users pay their rates under a contract signed with the company.

The FCC has been considering whether VANs should be regulated for some time, but has not yet arrived at a decision. Telenet assumed from the start it should be a regulated carrier and made the necessary applications to the FCC.

Tymshare, realizing it might be required to file a tariff to operate its packet-switched service, has said it would do so if ordered.

But the effects of carrier vs. noncarrier status on the user have never been clear. Some information is now available from Scientific Time Sharing Corp. (STSC), the first Telenet user [CW, Aug. 27]. In addition to being the first to operate under the Telenet tariff, STSC has also used the Tymnet service. The comparisons are interesting.

Tymnet uses 1960's technology, while Telenet uses more modern equipment, according to John Myrna, STSC communications manager. He described the

### First Telenet Tariff Based on Data Quantity

WASHINGTON, D.C. — The first tariff filed by Telenet Communications Corp. gives users a schedule of rates that is based on the amount of data transmitted instead of a per-mile or distance-sensitive rate.

The basic charge is 60 cents per kilopacket, or 1,024 bits of information, transmitted by the user. In addition, there are various classes of access points or ports at which the user enters the Telenet network. These access ports can be either dial-up or dedicated, and the charges are based on the speed of service used.

Public dial-in ports are available at one rate from 110- to 300 bit/sec at \$1.40/hour in high-density areas, which include the seven initial cities being served. This rate applies for the first 1,400 hours, after which it drops to 90 cent/hour.

Private dial ports are available at speeds from 110- to 4,800 bit/sec and range from \$100- to \$400/mo in the initial cities served.

Up to 300 bit/sec, the rate is \$100 plus a one-time installation charge of \$200. The private dial ports "are

available... for the exclusive use of a particular customer," Telenet said.

Leased channel ports are available at speeds from 50 bit/sec to 56 kbit/sec at rates ranging from \$75- to \$200/mo plus an installation charge. These access channels generally cost the same as existing Bell or other rates under DDS or private line services.

Users who have leased channel or private dial ports also pay a minimum monthly multiple connection charge (based on 50 connections) of \$200. This rate is determined by the number of peak simultaneous connections through the port each month.

A Telenet access controller installed at the user's site costs \$400/mo plus an installation fee of \$600. In addition, the user pays a monthly charge for an access port to the controller based on speed from 50- to 1,200 bit/sec. This ranges from \$25- to \$50/mo.

Initial cities served by Telenet are Boston, New York, Washington, D.C., Chicago, Dallas, Los Angeles and San Francisco. The carrier is at 1666 K St. N.W., 20006.

Tymnet facilities as very slow and too expensive for use on his APL Plus service.

STSC was paying \$6.50/hour to Tymshare to operate on the Tymnet network. But the company has recently restructured its rates, which Myrna thinks may have been prompted by the advent

of Telenet service.

In any case, Tymnet rates are now similar to AT&T high/low density charges. This means rates are lower in high-population areas and higher in low-population areas.

Under the restructured Tymnet rates,

## Mailgrams From Users' Tapes Speed Messages

MIDDLETOWN, Va. — Computer-originated Mailgrams are being used for a variety of business transactions such as collection of delinquent accounts, corporate announcements, new product announcements, price changes, product recalls, name changes and moves, sales promotion, invitations to meetings, shipping schedule changes and proxy solicitation.

Major users of computer-originated Mail-

grams include Shell Oil, Phillips Petroleum, Master Charge, BankAmericard, Publishers Clearing House and National Aviation Underwriters.

Computer-originated Mailgrams can be sent in three ways:

- From a company's computer or key-to-disk system that is equipped with a special program and a communications controller.

- From 27 special Western Union offices which accept bulk messages on computer tape produced either by a company's computer or key-to-disk system.

- From over 100 computer service bureaus which produce computer tapes from message material and address lists provided by a company for acceptance at one of the Western Union transmission centers.

Companies can prepare bulk messages on their own computers, on the key-to-disk systems of such manufacturers as Inforex, Mohawk, Singer, Sycor and Datapoint or on a Datatype optical scanner for direct transmission.

The key requirements are that they be equipped with a communications controller for transmitting a binary synchronous mode and that they produce a computer tape in Mailgram format acceptable to the Infomaster Mailgram program. Western Union offers the software package for this purpose free of charge.

This software program enables the user

Myrna said he would have to pay about \$4.50/hour of connect time. But this is still double the rate of \$2.28 which he estimates it is costing STSC on the Telenet system.

A Tymshare spokesman said his com-  
(Continued on Page 16)

### McNitt to Keynote TCA Meet

WEST COVINA, Calif. — "Telecommunications — Beacon to Bits" will be the theme of the 13th annual conference and exposition of the Telecommunications Association (TCA) in San Diego Sept. 23-26.

Keynote speaker will be Gen. James R. McNitt, president of ITT World Communications, Inc.

Six workshops slated for the conference will include a presentation for data communications administrators, a nuts and bolts description of how data is transmitted over communications lines, a discussion on the utilization of the domestic specialized carriers, a seminar on "Intelligent Terminals in Telecommunications" and a session titled "Trends in Regulations."

The "Trends in Regulations" session will include a discussion of the types of telecommunication regulatory trends that affect costs. Panel members will be Bernard Strasburg, retired chairman of the Federal Communications Commission's Common Carrier Bureau; Gerald Hellerman, special financial advisor to the U.S. Senate Subcommittee on Antitrust and Monopoly; Tom Keller, general counsel of the U.S. Office of Telecommunications Policies; and Ernest Garfield, commissioner of the Arizona Corporation Commission.

About 100 companies are expected to exhibit their products. Information on the conference is available from TCA 1975 Conference, 424 S. Pima Ave., 91790.

## Talk to us about Terminals



(left) AJ 830, the new 30 cps impact printer terminal which features quality and reliability.

(below) AJ 841, the rugged Selectronic™ printer terminal. A cost effective replacement for the IBM 2741.



(right) AJ 230, a mobile acoustic Teletype terminal. (Also available in auto-answer and TWX/DDD versions).

(below) AJ 630, a 30 cps quiet non-impact printer terminal with 140 character print line. (APL is an option).



AJ has one of the best selections of computer terminals in the business backed by nationwide sales and service. Take a look at our line-up of quality products:

- AJ 230 The popular Model 33 Teletype with a built-in acoustic coupler, plus a mobile stand for easy portability.
- AJ 841 Our original, rugged Selectronic™ terminal.
- AJ 630 A solid state, non-impact printer terminal that offers a 140 character line plus fast, quiet operation.
- AJ 830 A new 30 cps impact printer terminal built into a mobile stand.

If you're thinking about terminals, think about Anderson Jacobson. Better yet, write or give us a call and let us tell you more.



**ANDERSON  
JACOBSON**

1065 Morse Avenue • Sunnyvale, CA 94086 • (408) 734-4030



# Mailgrams From Users' Tapes Speed Business Messages

(Continued from Page 15)  
infomaster center.

A third alternative is for companies to use the services of a computer service bureau for the preparation of the tapes. Over 100 service bureaus have been certified for this purpose.

Service bureaus will keypunch material from raw data or produce a Mailgram-formatted tape from an original name and address tape.

Provision has also been made to generate a magnetic tape in a format acceptable to the processing program from customer data on punched cards. Such card input must be in the correct format for processing by the Western Union card-to-tape program, written in Cobol to allow use on a broad range of mainframe configurations.

The card-to-tape program is available without charge for customer use, as are compatible instruction manuals for either

customer tape or punched card input formats.

## Interface Receiver

Enroute to the serving post office nearest the addressee, messages go through the Infomaster center where Mailgrams are received on another PDP-8E acting as an interface receiver.

The tape is then entered off-line into a Univac 1108 which performs a preprocessing function, verifying Zip Codes and format, creating a message queuing tape for transmission and printing out billing information for the transaction.

The tape generated from this preprocessing is then fed into a second Univac 1108 which automatically routes and delivers each Mailgram message by store-and-forward techniques based on Zip Codes to the post office nearest the addressee. All Mailgrams on a computer

tape are sent out simultaneously.

At the output side are 121 serving post offices. These are classified according to light, medium or heavy traffic volume.

Forty heavy-volume offices are served by dedicated circuits from Infomaster, operating at 2,400 bit/sec. These circuits connect, through PDP-11 processors op-

erating as controllers, to a minimum of two Data Products 2310 line printers, each capable of processing 800 messages an hour.

Low- and medium-volume post offices are linked to Infomaster by dedicated 110 bit/sec lines feeding 100 word/min receive-only teleprinters.

## Communications Courses Offered

NEWTON, Mass. — Planning and implementing effective data communications systems and advanced teleprocessing systems analysis and design will be the main themes of two seminars being offered this fall.

The courses, sponsored by The Conference Company, were prepared by ICC Institute and Dr. Dixon Doll, a leading teleprocessing consultant. They will be held in several cities between September

and December.

Data Communications Course No. 1010 is a two-day seminar intended to provide attendees with a comprehensive exposure to the terminology, economic aspects and functional characteristics of contemporary data communications devices, techniques and systems.

The faculty, led by Doll, will examine the latest communication developments, including Synchronous Data Link Control (SDLC), the principles of operation and prices for Dataphone Digital Service (DDS), HiD-LoD and the impact of satellite and specialized carriers.

Course No. 1020 is designed for professionals who want an in-depth familiarity with the techniques for planning, designing and managing cost-effective commercial data communications networks. This seminar assumes a degree of experience on the part of attendees.

One particular feature of Course No. 1020 is the opportunity for attendees to present their organization's problems for study and discussion by the instructors and class members.

The three-day course covers all practical aspects of data network planning analysis and design quantitatively. It considers both on-line and batch-oriented nets using dial-up and leased lines, as well as multiplexers and concentrators.

The registration fee for Course No. 1010 is \$350 and \$450 for Course No. 1020.

Further information is available from The Conference Company at 797 Washington St., 02160.

## VAN Regulation Issue Left at Door of FCC

(Continued from Page 15)  
pany is studying the initial tariff filed by Telenet. "We intend to be competitive with the Telenet rates," he said, but specific comparison cannot be made until Tymshare has had a chance to become familiar with the Telenet rate structure.

The issue of whether packet-switched services should be regulated is before the FCC as part of Docket 20097, titled "Regulatory Policies Concerning Resale and Shared Use of Common Services and Facilities."

The VANS use conventional lines from AT&T and others and add "value" to these facilities. In the case of packet-switched services, this added value is made up of software that rearranges a customer's data for more efficient transmission over the communications lines.

Tymshare believes this is simply the sharing of common facilities among a group of users. Telenet thinks this is a service that should be regulated and provided by a common carrier.

Probably a third option would be to allow both situations to exist, as is now the case with Telenet and Tymshare.

It is not clear yet which method provides the communications user with the best service, under the most stable conditions and at the lowest rates. That is an answer that the FCC will have to determine.

Current estimates are that the commission will make a ruling sometime this fall. In the meantime, users can pay their money and take their choice.

If you  
haven't talked  
to UCC about  
financial control  
software, you aren't  
ready to buy.

Unless you've talked with us, you may not know that the UCC General Ledger/Financial Control System is the most complete system of its type—with features like a single financial data base, full cost allocation, budgeting and a user-oriented report writer—generating over 100 standard reports.

And, maybe you don't know that UCC FCS utilizes a true data base design with a single master file that can be accessed on a sequential or random basis.

And, finally, you may not know that there are over 150 satisfied users of the UCC General Ledger/Financial Control System.

What you don't know, you can find out by mailing this coupon or calling Richard Steller at (214) 637-5010.

☐ Please send me more information:

☐ Have someone call me about:

The UCC General Ledger/Financial Control System.

Name \_\_\_\_\_

Title \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

City/State/Zip \_\_\_\_\_

Telephone \_\_\_\_\_

Mail to UCC Financial Software  
P. O. Box 47911  
Dallas, Texas 75247  
Or call Richard Steller  
(214) 637-5010

# UCC

## UNIVERSITY COMPUTING COMPANY

7200 Stemmons Freeway P. O. Box 47911 Dallas, Texas 75247  
A Wyly Company





# When a computer goes down, it can put a lot of people out of work.

Anyone who has a computer will tell you it breaks down now and then. The problem is, when the computer stops working, so do all the people who depend on it.

So if you have to keep your operations going no matter what happens to the computer, we suggest you buy a Data General system with two computers in it. Then, if one goes down, the other one can keep you going.

Data General has everything you need to make a multiprocessor system go: dual ported Discs, Interprocessor Bus, Multiprocessor Communications Adapter, I/O Bus Switch, Power/Fail Auto Restart. And they're all part of the original design. Not stuck on as an afterthought.

Unlike some computers, a multiprocessor system from Data General is fully supported by all our standard

operating systems. So you can concentrate on your application.

And on some of our single processor systems we even offer options like Automatic Error Checking and Correction. It keeps the computer going by automatically detecting and correcting all single bit memory errors.

Data General computers are less likely to break down because they have fewer interconnections than most computers. But if one of our computers ever does go down, you can call in your local Data General service representative. All the major functions of our computers are on separate modules so it's easy for him to locate problems, and easy to correct them.

So if you don't want to be let down by your computer, put in a call to Data General.

That way, you won't suddenly find yourself out of work.

## DataGeneral

Data General, Route 9, Southboro, Mass. 01772 (617) 485-9100. Data General (Canada) Ltd., Ontario,  
Data General Europe, 15 Rue Le Sueur, Paris 75116, France. Data General Australia, Melbourne (03) 82-1361/Sydney (02) 908-1366.



## Credit Reporting Service Finds

# Mix of Line Facilities, Gear Keeps Net's Downtime Low

By Ronald A. Frank  
Of the CW Staff

ANAHEIM, Calif. — When a data communications network handles 15,000 inquiries per hour, downtime must be kept to a bare minimum. One way to assure a reliable network is to select a mix of efficient line facilities and equipment, and that is what TRW Credit Data has done.

The company operates a nationwide consumer credit reporting service that provides information to department stores, finance companies, savings and loan organizations and other businesses which extend credit to customers.

About 7,000 subscribers depend on TRW for credit reports that are sent to more than 22,000 locations around the country. Many of these locations operate

on-line to the firm's central data base of consumer credit records here.

The network operates with three types of remote city configurations. The configurations are based on the amount of inquiries handled in each area, but each has equal priority in accessing the credit records.

In lower volume areas, subscribers use teletypewriters which are connected over dial-up lines to a Comten 3670 concentrator. The 3670 acts as a store-and-forward device and transmits the credit inquiries to Anaheim at 4,800 bit/sec.

In higher volume cities, TRW subscribers have Datapoint 3360 CRTs which use a Hewlett-Packard 2114B processor to concentrate the data and transmit it to the DP center at 4,800 bit/sec.

For customers without their own ter-

minals, a call is placed to a local TRW site where operators take the inquiry information and enter it into Raytheon PTS-100 CRTs. These terminals then operate on-line to Anaheim at 2,400 bit/sec.

## Terminal Transactions

The network includes Codex and International Communications Corp. modems. In some cases, split-stream modems on a 7,200 bit/sec line operate with a 4,800- and 2,400 bit/sec circuit, each handling a separate credit operation.

The network also includes Timeplex and

Tel-Tec multiplexers. Most of the lines are Bell 3002-type with C-2 conditioning, but the net also includes one Telpak circuit in California.

"Without question, one of the biggest problems [in running a nationwide network] is keeping a data line up," according to Ray Ybaben, TRW vice-president.

Anyone going into data communications has to plan for a data line going down and there must be an alternate facility. There is about an hour of downtime, usually due to line malfunctions, in the network each day, he said.

In the early days of the TRW network each site had to have two lines in case the first went down. But now, with the improvement in modems and the reliability of the dial-up network, the credit service can rely on dial-up facilities for backup.

But this is not low-cost. An hour of dial-up operation between New York and Los Angeles can add \$100 to the TRW monthly phone bill, Ybaben said. One reason is that two dial-up calls must be placed to establish a four-wire connection as a backup circuit.

The data base at the Anaheim DP center runs on dual 370/158s which operate under CICS. But the TRW software staff has developed its own multitasking control program which is slowly being phased in to replace the IBM software, according to Paul Palermo, TRW director of software services.

The data base is contained on IBM 3330-11 disks and contains files on an estimated 50 million consumers. Peripherals also include 24 IBM and Storage Technology Corp. tape drives shared between the 158s and a Model 155 that is used as the backup system.

The network includes 35 high-speed and 453 low-speed lines; data transmission is controlled by five Comten 3670 processors. Response time ranges from "three to 10 seconds" and the network operates 17 hours each day.

TRW pays about \$35,000/mo for lines and \$10,000/mo for modems, Ybaben estimated. But the system is like a moving target, having added 10 new cities in the past two years, and new lines are being added all the time.

## Programmable BDTS Exercises Systems

MOUNT LAUREL, N.J. — The Spec-tron Corp. buffered data transmission simulator (BDTS) is a programmable message generator for exercising data communications systems.

System installation and repair time is reduced by testing modems, terminals or controllers with actual polling sequences under simulated operating conditions, the vendor said.

The BDTS may be used to debug hardware and software by testing new communications protocols on-line without the need for CPU time. Data streams may be stored in 1,024 bytes of customer specified read-only memory (ROM) and/or 1,024 bytes of random-access memory (RAM).

Transmission may be synchronous or asynchronous, from 5- to 8 bit/char. and at any of 16 standard communication rates, using internal clocks or at any speed using the modem clock.

The BDTS may be used as a stand-alone device or in conjunction with the Spec-tron Datascope. In the latter configuration, the BDTS generates data patterns to exercise the equipment under test while the Datascope records and displays the performance.

Price of the BDTS is \$1,850. Delivery is 30 days from the firm at Church Road and Roland Ave., 08057.

# The ABZ's of DBMS

**A special supplement on Data Base Management Systems in the September 24th issue of Computerworld.**

Data Base Management Systems are the subject of widespread interest in the DP community today, and they will be the subject of this special supplement in *Computerworld*. We'll be examining many aspects of Data Base Management in detail, with special emphasis on the applications that are best suited to Data Base Management. You'll see articles, tutorials and applications stories on topics like these:

- **When to use a Data Base Management System vs. another approach**
- **Applications best suited to Data Base Management**
- **Matching functional capabilities and system features to specific types of applications**
- **The advantages and disadvantages of using a network's Data Base Management System vs. an in-house system**
- **Danger Signals - things that can go wrong, and what to look out for in particular**
- **The benefits of Data Base Management vs. alternative approaches**
- **What's to be said for designing your own system, versus using a package**

If you have anything to do with Data Base Management, you should be reading this special supplement in the September 24th issue of *Computerworld*. And if you're a marketer in this field, your ad should be there. Closing date is September 4th. Contact your area *Computerworld* salesman for complete details. Or, call Judy Milford or Sara Steets at (617) 965-5800.



# COMPUTERWORLD

**Boston**  
Bob Ziegel  
Mike Burman  
(617) 965-5800

**New York**  
Don Fagan  
Frank Gallo  
(201) 461-2575

**San Francisco**  
Bill Healey  
Donna Dezelan  
(415) 495-0990

**Los Angeles**  
Bill Healey  
Tamar Shapiro  
(213) 477-3535



## Let CW Share Data Entry Triumphs

October is data entry month at *Computerworld*. And the Special Report in the Oct. 29 issue will cover the wide spectrum of data entry with heavy emphasis on remote data capture.

You don't have to be a professional writer to tell of your installation or application in CW. If you believe your installation or application is unique and cost-effective, just write us a long letter (three or four typed pages, double spaced) and explain what you had before, what you have now, why you changed, the advantages of the new system and just how effective the change was from a cost or time savings point of view.

Pitfalls identified or overcome are always interesting, as are recommendations to other users who may embark on the same course.

Our team of editors will take it from there.

If you're not sure of just how interesting your story is, send a short note to Associate Editor Vic Farmer or Assistant Editor/Systems Patrick Ward, who are putting the report together.

One of the most popular stories in CW is just this sort of application story.

CW is at 797 Washington St., Newton, Mass. 02160.

## 3350-Compatible

# STC Adds Fixed-Disk Units

By Patrick Ward  
Of the CW Staff

LOUISVILLE, Colo. — Storage Technology Corp. (STC) has boosted the linear bit density of its 8400 and 8800 fixed-disk drives to offer IBM 3350-compatible storage at a cost up to 50% lower than the IBM product, according to STC.

The STC models take a different path from the recently announced California Computer Products (Calcomp) 235-4, which employs 700 track/in. technology to provide 400M byte per spindle storage

[CW, Aug. 20].

STC has also announced an IBM 3350-equivalent 317.5M-byte drive, the STC 8350.

It costs about 15% less per month than the IBM device, STC said.

The newly announced STC 8450 and 8850 drives emulate two and four 3350s respectively. They use the "quad pack" design of the company's current 8400 and 8800 fixed-disk models to provide the effect of a single, 60-platter spindle, an STC spokesman said.

The 8450 and 8850, however, have 50% higher linear bit density at 6,425 bit/in. to provide 635M-byte- and 1,270M-byte storage respectively. The 8400 and 8800 provide 400M bytes and 800M bytes.

The STC 8450 and 8850 use the same 238 track/in. ratio used on the 8400 and 8800. Both the 8450 and 8850 provide a 1,198 kbyte/sec transfer rate, the firm said.

The currently available 8400 and 8800 models can be field upgraded to 8400s and 8450s in late 1976, STC said.

In a comparison of a one-controller, eight-drive IBM 3350 configuration against a one-controller, four-drive STC 8850 system, an STC spokesman said 1M byte of storage would cost \$3/mo on the IBM 3350 and \$1.55/mo on the STC 8850.

STC said the 8450 and 8850 are primarily aimed at users that have low-activity disk drives, new applications that have heretofore been unjustified because of the costs of on-line storage and tape data set migration.

All the STC drives will attach to IBM 370 Models 135 and above and can be interfaced through the STC 8000 disk control unit. A single controller can intermix 3330-equivalent STC 8100s, 8350s, 8400s, 8450s, 8800s and 8850s, STC said.

Two-year lease prices are approximately \$500/mo for the 8350 drive; \$955/mo for the 8450 and \$1,485/mo for the 8850. Customer shipments are scheduled for the fourth quarter of 1976 from the firm at 2270 S. 88th St., 80027.

## CFI, IBM Score High in Datapro Media Survey

DELRAN, N.J. — CFI Memories, Inc., won the highest user satisfaction ratings of any disk pack vendor, and IBM led the list of tape suppliers in a recent survey by Datapro Research Corp.

Datapro had responses from a total of 318 users of DP media and supplies. The respondents reported their overall experience with the various brands of supplies by assigning a rating of excellent, good, fair or poor to each vendor's products.

Nine brands of disk packs were rated by 10 or more users, and all nine earned high ratings. CFI Memories amassed a weighted average user rating of 3.7 on a scale of 4 for excellent, 3 for good, 2 for fair and 1 for poor.

IBM, Memorex, 3M and Wright Line all tied for second place at 3.6, and they were followed closely by Caelus (3.5), BASF (3.4), Control Data (3.4) and Nashua (3.4).

The survey also brought responses from IBM-3348 data module users who gave their removable disk packages a 3.7 score. Thirty out of 39 respondents rated the product "excellent," Datapro noted.

Among magnetic tape suppliers rated by 10 or more users, IBM was ahead with a weighted average score of 3.8. Graham and 3M tied for second place at 3.6, followed by BASF and Memorex at 3.5.

Among the vendors of printer forms rated by 10 or more users, Duplex Products earned first place with an average rating of 3.7, followed by Shade, Inc. (3.5), Data Documents (3.4), Moore Business Forms (3.4), Standard Register (3.3) and Uarco (3.2).

Jersey Tab Card received top honors among punched card suppliers rated by 10 or more users by earning an average rating of 3.7, followed by IBM (3.6), Data Documents (3.4), OEI (3.4), Pryor (3.3) and National Electronic Card (3.2).

Moore Business Forms and Codo Manufacturing Corp. shared 3.7 ratings to lead the printer ribbon suppliers. Burroughs and IBM followed with 3.5 scores. Aetna Products Co., Columbia Ribbon and Car-

bon, Data 100 and Kee Lox Manufacturing Co. shared the next highest score of 3.3.

Memorex led floppy disk vendors with 3.7 score; IBM trailed closely with a 3.6 and Wabash came third with 3.3.

MSI Data Corp. led the list of magnetic tape cassette and cartridge suppliers with a 3.5 user rating, ahead of Sycor and NCR which had 3.0 and 2.3 ratings re-

## Ansi Publishes OCR-B Standard

NEW YORK — OCR-B, an alternative character set for optical character recognition (OCR) systems that is easier for human beings to read, has just been published as an American national standard by the American National Standards Institute (Ansi).

The widely used optical character set, OCR-A, has been in use for a number of years. Its emphasis is on optimum machine performance. OCR-B was created to give users a choice of readability between machines and people; its emphasis is on conventionality of appearance to make it easier for employees to work with OCR documents and records, Ansi said.

The American national standard for OCR-B has been approved by the U.S. secretary of commerce for use in acquisition of federal computer systems by the General Services Administration. It has been designated Federal Information Processing Standard 32.

### Sizes, Shapes Set

The standard describes and illustrates shapes, sizes and printing positions of OCR-B alphanumeric characters and symbols. The character repertoire includes numerals, upper-case and lower-case characters and special symbols in one or more of three different sizes.

The standard was developed by a subcommittee on OCR of American National Standards Committee on Computers and Information Processing, X3. The Com-

spectively.

These survey results are contained in "All About EDP Media and Supplies," a 30-page report reprinted from the August Supplement to *Datapro* 70. The report also includes comparison charts that summarize the product lines of 167 vendors.

"All about EDP Media and Supplies costs \$10 per copy from the research firm at 1805 Underwood Blvd., 08075.

puter and Business Equipment Manufacturers Association (Cbema) holds the secretariat.

Designated American National Standard Character Set for Optical Character Recognition (OCR-B), X3.49-1975, the 60-page standard costs \$9.75 a copy from the Sales Department, American National Standards Institute, 1430 Broadway, 10018.

Ansi describes itself as the clearinghouse and coordinating agency for voluntary standardization in the U.S. It approves a standard when it receives evidence that all parties having a substantial interest in a particular standard have been given an opportunity to cooperate in the standard's development or to comment on its provisions.

## Tape Unit Interfaces HIS CPUs

MT. LAUREL, N.J. — The F383 magnetic tape subsystem from Formation, Inc. is said to be an automatic loading, fourth-generation tape system that is plug-compatible with Honeywell Series 200 and 2000 computers.

The F383 can function in eight Honeywell-equivalent modes, such as 7-channel (at 200-, 556- or 800 bit/in.), and 9-channel (800- or 1,600 bit/in. NRZ), and at speeds from 70- to 150 in./sec.

The F383 microprogrammed control

unit can accommodate all modes and can control up to eight tape drives in a dual-channel configuration, with read-write simultaneity.

The system's software is compatible with Honeywell software, as well as being industry-compatible with S-6000, Ebcidic and Ascii tapes, Formation noted.

Rental of the basic F383 magnetic tape subsystem starts at \$3,500/mo from the firm at 823 East Gate Drive, 08057.



## NEW! Low cost Dual Cassette

Only \$2260 (in 100 quantity; \$1399)

An incredible price. For an incredible new dual cassette recorder. The logical, inexpensive step-up from paper tape. STANDARD features: dual cassettes • 145,000 characters per cassette • 110/300/1200/2400 baud • full remote control • tape duplication • simultaneous read/write • character edit • fast forward • selectable stop codes for editing • terminal & modem interfaces • fast 120 ips rewind • only 8½ x 11 x 11 inches • all for only \$2260.



**TECHTRAN** INDUSTRIES, INC.  
ROCHESTER, NEW YORK (716) 271-7953



**TECHTRAN** INDUSTRIES, INC.  
580 JEFFERSON ROAD, ROCHESTER, NEW YORK 14623

Please send me more information on the new 8420 Dual Datacassette.

NAME \_\_\_\_\_  
TITLE \_\_\_\_\_  
COMPANY \_\_\_\_\_  
ADDRESS \_\_\_\_\_  
CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_  
PHONE \_\_\_\_\_



# System Keeps Cash-and-Carry Operation Competitive

By Patrick Ward  
Of the CW Staff

PROVIDENCE, R.I. — Computers may be leading to a cashless society, but they can help "cash-and-carry" stores compete in the retail marketplace, too.

For example, the four Brewsters cash-and-carry building materials stores in New England use an automatic invoicing system that provides management with current sales and cash information, cases price changes and inventory control and even gives salesmen more time to deal with customers, according to Stephen Maloney, vice-president of finance of Bridgton Distributing Co., which runs Brewsters stores.

Before Brewsters began using an in-house 32K Univac 9214 CPU in 1972, salesmen would write out their own invoices at the sales counter. This often required an adding machine and could take 10 to 20 minutes, including the time

to figure taxes, Maloney recalled.

Now the process takes about 10 seconds, he said. Each store has two Uniscope 100 CRTs behind the sales counters. To invoice an order, the salesman keys in the number and quantity of the items his customer is purchasing and hits a button; the system prints out the complete invoice on a Centronics printer.

Brewsters can very easily change the prices of its items by updating files in the automatic invoicing system, Maloney noted.

The terminals in the Wilmington, Mass., Hartford, Conn., and Milford, Conn., stores are linked by 2,400 bit/sec lines to Brewsters headquarters here.

The computer center in Providence batch processes about 1,600 invoices a day during the week and about 2,500 on Saturdays. On a typical day, Brewsters may take in \$100,000 to \$125,000 in cash.

The system prints an updated inventory list each Friday, analyzing sales by item. However, Brewsters is working toward an on-line inventory system which will allow managers to inquire from terminals for information on quantities on hand and on order.

## Additional Duties

The computer figures in Brewsters cash-and-carry operation in other ways, too:

- At mid-week, it provides a list of all accounts payable scheduled for payment and prints the checks each Friday, automatically figuring discounts. This complete voucher system accounts for all purchase orders, vendors and dates of payment.

- The computer is programmed with five methods of calculating sales commissions, depending on the store and salesman. It figures commission at the close of business each Friday.



The Univac 9214 at Brewsters' Providence office is still being used while the cash-and-carry operation switches over to a 90/30.

The 40 full or part-time sales people at all four stores are paid each week, and the computer includes the commission for the previous week when it prints the paychecks.

- The Brewsters pricebook is prepared from a computer printout of items and prices based on the inventory control system. The pricebook is then printed in about two days.

"The computer gave us immediate savings here," Maloney said. "We used to spend six weeks preparing and editing the initial proofs. Now we receive a printout immediately."

The 9214 also provides monthly printouts of financial statements for each store and supplies management with a monthly summary of the market value of the firm's total investment portfolio.

## 'Cards Out of Our Ears'

Brewsters had used a service bureau before installing the 9214. "We had cards coming out of our ears and had to crate them down to the service bureau," Maloney recalled.

The cost of the service bureau was running close to the cost of a 9214 when the firm decided to bring in its own CPU, he said.

Brewsters will soon replace the 9214 with a 98K Univac 90/30 whose extra capacity will be able to support several additional applications, Maloney said.

Three Univac 8416 disk subsystems will provide about 88M bytes of storage. The shop will also have a 500 line/min Univac 0773 printer; a Uniservo 6C tape subsystem; a 500 card/min card reader; and a 75- to 160 card/min card punch.

In addition, the installation will include a communications adapter handling six full-duplex lines servicing a total of 10 Uniscope 100 CRTs.

The Brewsters communications application was developed by a Univac project engineer. Brewsters' own programmers developed the accounts payable, payroll and general ledger batch programs.

Rath and Strong, Inc., a consulting firm, provided the inventory and inventory analysis programs.

Brewsters is now offering its batch programs and techniques to other interested firms.

## Maintenance Society Seeks New Members

WOODLAND HILLS, Calif. — The Association of Field Service Managers (AFSM) is seeking members from the managerial levels of firms engaged in the maintenance of computers or similar electronic gear.

The group hopes to provide a base of practical knowledge to improve the overall performance of the profession, as well as provide a means for the exchange of ideas.

Membership information is available from the AFSM, c/o J. Thomas Evans, 20501 Hatteras St., 91364.

## Here's an easy way to improve your printing output.



If the quality of your printed output does not reflect the quality of your organization, or, if your throughput is less than it could be because your printers are down too often, Grumman has a low cost, easy-to-apply answer: just hook up an IBM printer to your system with our printer controller.

Our printer controller interfaces an IBM 1403 model -2, -3, or -N1 to a variety of computers (Burroughs, CDC, Data General, DEC, Digital Scientific/IBM 1130, Univac, Xerox, and others on request). The IBM 1403 printer has compiled an unsurpassed record for print quality and reliability in thousands of installations. Now you can have the same benefits without having an IBM computer. And at less cost than the IBM user, because our

Grumman printer controller costs less than IBM's.

Are you considering a change in your system, such as an upgrade, or a change in manufacturer? You may find that for the same or less money you can improve your print quality and throughput with the IBM 1403 and Grumman printer controller, instead of the printer your computer vendor supplies.

For multi-vendor installations we can add a switch to your controller to allow you to connect the IBM 1403 to either of two different computers.

You can rent, lease or buy both the printer and controller. For full information, call or write Joe McDonough, Grumman Data Systems Corporation, 45 Crossways Park Drive, Woodbury, New York 11797. (516) 575-3034.

## Grumman Data Systems

Products and services that lower the cost of computing.

GRUMMAN



# Dear Computerworld:

I (borrowed) (stole) (shared) (copied) this issue of *Computerworld*, and it made me:

- ☐ PROUD
- ☐ SKEPTICAL
- ☐ ANGRY
- ☐ PLEASED
- ☐ INVOLVED
- ☐ AWARE
- ☐ CURIOUS
- ☐ EXCITED
- ☐ DEMANDING
- ☐ FURIOUS
- ☐ INFORMED
- ☐ SURPRISED
- ☐ ALL OF THE ABOVE

☐ PLEASE ENTER MY SUBSCRIPTION (details on back)

Put old label or label information here

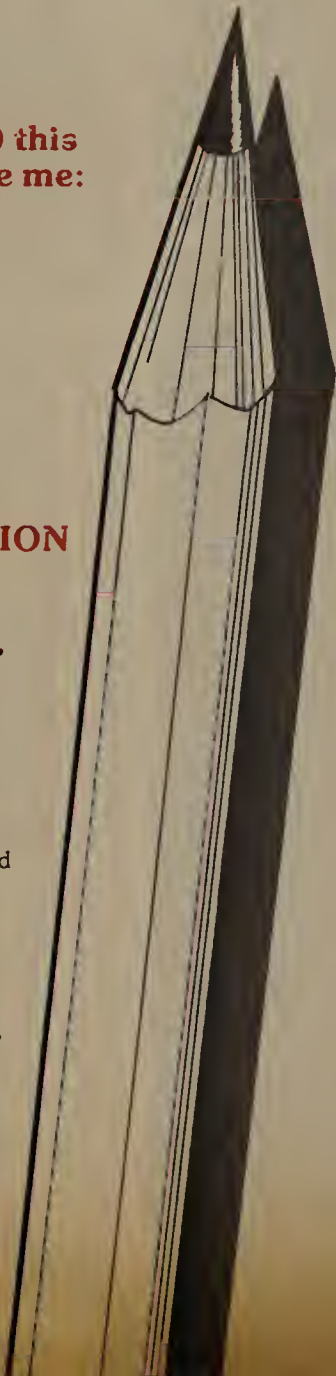
- ☐ I'm already a subscriber, but I'd like you to change my:
- ☐ address
- ☐ title
- ☐ industry
- ☐ other

My current mailing label is attached and I've filled in new information on the other side.

**Note:**  
Please fill out form on back, detach and insert in post-paid envelope attached through binding.  
Thank you.



COMPUTERWORLD





Please send me **COMPUTERWORLD** for 1 year

RATES: U.S. - \$12 Canada and PUAS - \$20 Other foreign - \$36

7 Check Enclosed

☐ Charge My American Express Account

First Initial	Middle Initial	Surname							
Your Title									
Company Name									
Send to Address									
City				State			Zip Code		

Address shown is: ☐ Business ☐ Home

☐ Check here if you do not wish to receive promotional mail from Computerworld.



COMPUTERWORLD

CIRCULATION DEPT. 797 Washington Street, Newton, Mass. 02160

PLEASE CIRCLE 1 NUMBER IN EACH CATEGORY

BUSINESS/INDUSTRY

- 10 Manufacturer of Computer or DP Hardware/Peripherals
- 20 Manufacturer (other)
- 30 DP Service Bureau/Software/Planning/Consulting
- 40 Public Utility/Communication Systems/Transportation
- 50 Wholesale/Retail Trade
- 60 Finance/Insurance/Real Estate
- 70 Mining/Construction/Petroleum/Refining
- 75 Business Service (except DP)
- 80 Education/Medicine/Law
- 85 Government - Federal/State/Local
- 90 Printing/Publishing/Other Communication Service
- 99 Other:

TITLE/OCCUPATION/FUNCTION

- |    |   |
|----|---|
| 11 | President/Owner/Partner/General Manager                           |
| 12 | VP/Assistant VP   |
| 13 | Treasurer/Controller/Finance Officer                              |
| 21 | Director/Manager of Operation/Planning/<br>Administrative Service |
| 22 | Director/Manager/Supervisor DP                                    |
| 23 | Systems Manager/Systems Analyst                                   |
| 31 | Manager/Supervisor Programming                                    |
| 32 | Programmer/Methods Analyst  |
| 41 | Application Engineer  |
| 42 | Other Engineering   |
| 51 | Mfg Sales Representative  |
| 52 | Other Sales/Marketing   |
| 60 | Consultant  |
| 70 | Lawyer/Accountant   |
| 80 | Librarian/Educator/Student  |
| 90 | Other:  |

**Detach here, fold, and place in post-paid envelope attached through binding.**



Detach here, moisten and seal envelope securely before mailing.

Fold and insert order form (attached through binding) and remittance here.

Use the attached order form and this envelope for:



- A new subscription
- New address
- New Title
- New Industry

Order form is attached through binding. Be sure to include current label or label information when making a change.



First Class  
Permit No. 40760  
Newton  
Mass.

**BUSINESS REPLY MAIL**

No postage stamp necessary if mailed in the United States

Postage Will Be Paid By



**COMPUTERWORLD**

797 Washington Street  
Newton, Mass. 02160

CIRCULATION DEPARTMENT





Basic Nixdorf 8870 system includes one 10M-byte disk drive, line printer, CPU and terminal.

## Nixdorf Combines U.S. Products As Basis of Turnkey Philosophy

By Vic Farmer  
Of the CW Staff

CHICAGO — While the hardware is pretty standard, it is the operating system and promises of maintenance and software applications support that is sure to interest users looking at the Nixdorf 8870 minicomputer system.

The Nixdorf name on the nameplate is about the only thing on the 8870 minicomputer system that is German. Other than that, Nixdorf has managed to combine Digital Computer Control's CPU, Diablo disk

drives, Data Products and Centronics printers, Hazeltine CRTs and Pertec tape drives into a typical business-oriented turnkey minicomputer system.

And, in a plant just outside of Chicago, it assembles and tests the equipment.

True, there is a good chunk of Nixdorf engineering in the system integration, but it is mostly the operating system that forms the goldplate around the basic iron. Nixdorf also supplies a German-made, 165 char./sec matrix impact printer as an option.

The operating system is designed to support interactive time-sharing and background processing simultaneously. Through the use of virtual memory up to nine CRT terminals can be added without increasing main memory size, according to the firm.

The disk-resident operating system allows for:

- On-demand dynamic disk allocations.
- Automatic terminal usage accounting system.
- Sequential, indexed, random and text-file processing.
- Automatic blocking and de-blocking of data records.
- Automatic task scheduling.

- Program chaining.

The only language presently available is Business Basic; extensions include extended precision decimal arithmetic, data files, signaling, chaining, error branching, special functions and provision for large strings and arrays.

Applications packages are available for wholesalers, distributors, manufacturers, medical clinics and municipalities with standard functions ranging from sales analysis to general ledger and billing.

The basic configuration is a 48K-byte core memory CPU, a 10M-byte disk drive, 100 line/min printer and one CRT keystation. This costs \$40,000 with software additional. Leases are available from a third-party lessor.

The maximum configuration has 64K-byte memory, two disk drives and nine CRTs with a printer capable of 600 line/min.

The disk drives are 5M-byte removable and 5M-byte fixed on the same spindle.

Nixdorf Computer Inc., U.S. subsidiary of Nixdorf Computer AG, is at Suite 365, O'Hare Plaza, 5725 E. River Road, 60631.

## And Matrix Line Printer

## Two Models Added to NCR 399 Line

DAYTON, Ohio — Two disk-oriented NCR 399 accounting computer systems, one featuring a matrix line printer, are available from NCR Corp.

These top-of-the-line models are designed for small and medium-sized businesses, as well as large firms with decentralized information processing requirements, NCR said.

The first model, the NCR 399-113, rents for \$795/mo and has a purchase price of \$31,800. It consists of a processor with 20K memory, one magnetic tape cassette handler and a disk unit with a storage capacity of 4.9M characters.

The second model, the NCR 399-114, includes the 20K processor, one cassette handler, a common trunk, the 4.9M-character disk unit and a 55 line/min matrix printer. This model rents for \$925/mo and has a purchase price of \$35,750.

### Ledger Cards Optional

Use of magnetic ledger cards is available as an option.

Both models will be available for delivery in December.

Prices for the previously released basic 399 system, which uses magnetic ledger cards or magnetic cassettes as storage devices, begin at \$14,000 and range to about \$26,000, depending on the number of peripherals ordered. The 399 can be used either as a free-standing system or satellite system.

The 4.9M-character disk unit used with the two latest 399 models is a modified version of the 9.8M-character NCR 656 disk unit. The larger capacity disk is also available as a peripheral for all 399 models.

The smaller disk unit, including integrated controller, is priced at \$12,000.

NCR also announced the price of the larger capacity 656 disk

unit has been reduced from \$17,500 to \$15,000.

The matrix line printer is a table-top, 132-column single-head impact printer. It prints at a rate of 173 char./sec.

The printer, which is available for delivery this month, can be added to currently installed NCR 399 systems. It sells for \$4,995 and has a monthly rental of \$160.

## Three Similar Minis Target of Ticketing Task

GOTHENBURG, Sweden — Swedish ferry operator Tor Lines AB has installed a minicomputer system in each of its

three ports of call in an effort to increase the load factor of its fleet of 10 ships and to minimize the time the ships spend in ports.

Tor Line operates eight freighters and two passenger ferries between its home port of Gothenburg, Amsterdam and the English port of Immingham. The passenger ships carried more than 270,000 passengers in 1974.

"With increasing loads, the earlier manual system for seat and cabin reservations, travel document preparation and check-in procedures became unwieldy," said one Tor Line official. "It resulted in low load factors and long port times."

With additional ferries set to begin service this year, the shipping line automated the system using minicomputers and data entry stations at ticket sales of-

fices and check-in counters.

In order to get complete redundancy and minimize communications costs, identical minicomputer systems were located in each of the three countries involved. Should one system become inoperative, the other systems are still available through normal dial-up telephone lines.

Each system consists of a Hewlett-Packard dual-processor 2000F minicomputer with 23M bytes of disk storage and a 200 line/min printer.

## Vinyl Covers Protect System/3s

RUTHERFORD, N.J. — A durable, heavy-duty set of vinyl covers for the IBM System/3 is available from the S/3 Supply Co.

The covers are designed to protect against sprinkler system and

The Gothenburg system is equipped with a 600 line/min printer. All systems have identical data bases which are updated automatically every night with each day's new data.

The newly installed systems, with Tor Line Passenger Administrative System (Topas) software, will be used initially for passenger reservations, to compile shipping statistics and perform administrative tasks. Applications will be expanded later to include the freight shipment operations, the firm said.

other utility malfunctions.

Covers are available for all models of the System/3 and System/32. A typical Model 10 set costs \$170.

The firm can be reached through P.O. Box C, 07070.

## S/3 Users Meeting in Pa.

YORK, Pa. — The Central Pennsylvania System/3 Users Group is holding a two-day seminar on the System/3 in Harrisburg, Pa., on Oct. 28 and 29.

Twelve sessions will cover such topics as comparison of the System/3 models 8, 10, 12 and 15; data entry with cardless considerations; and teleprocessing.

Registration is \$35. The users group can be reached through Box 174, 17405.

## An important offer to users of timesharing terminals.

No terminal supplier can offer you more experience and better service for the cost than Western Union Data Services Company.

Our years of experience in the timesharing terminal field have produced a product line with more than 250 terminal options. So you can be sure the terminals we provide match your specific operating requirements.

You can choose a cost-effective terminal configuration from our wide variety of models, with speeds from 10 c.p.s. to 120 c.p.s.

All Western Union Data Services terminals come with Termicare®, our exclusive diagnostic, maintenance and support service. One toll-free call for nationwide service.

We'd like to show you how you can get the most from your timesharing terminals. Just call us today at 800-631-7050. (In New Jersey, 201-529-1170.) Or write to Western Union Data Services Company, 70 McKee Drive, Mahwah, New Jersey 07430.

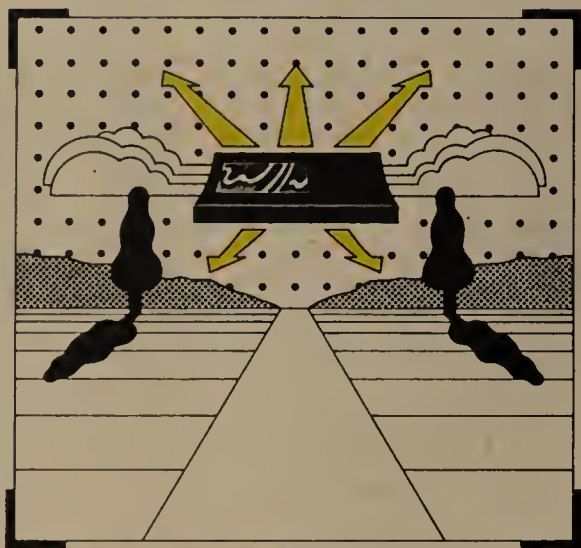
 data services company  
western union



# Meet The

## The Reasons Behind Datapoint's

**ONE**



### **HARDWARE**

It's no secret; Datapoint Corporation offers the industry's broadest roster of proven dispersed data processing systems, a diversity and selection of equipment with particular appeal for the network system designer. Our full product line includes the Diskette 1100 and Cassette 1100 Intelligent Terminals, the Datapoint 2200 Business Processor and the Datapoint 5500 Advanced Business Processor, all offering powerful internal computers, easy to read video display screens, full typewriter-style keyboards and many other features. Each of these units offer users a sophisticated, integrated data entry, data storage, local data processing and data communications capability.

These versatile, fully programmable processors are backed by a wide array of peripherals expressly designed for business applications. These include: *Three Disk Units*; a low-cost diskette unit, a powerful removable cartridge disk system and, for high volume storage applications, a 24 million character mass storage disk unit. *Six Printers*; ranging from a 30 cps Servo printer to a 300 LPM Line Printer. Matrix and belt printers are also available. *Three Tape Units*; both 800 and 1600 bpi drives in 7 or 9 tracks. *Communication Adaptors*; five models are cataloged to cover the communications spectrum from 110 Baud to 4800 Baud, synchronous and asynchronous. IBM compatible, too. *Three Data Terminals*; for network utilization. These well engineered low-cost systems offer easy, reliable operation. Optional terminal printer also available.

Powerful yet easy to use, this equipment places a formidable computing capability in the hands of commercial and business users, allows the effective use of computer power not only by professional EDP personnel in home office facilities but also by relatively untrained workers in field offices. This family of Datapoint equipment (and it's growing all the time) has generated enthusiasm and excitement as well as bottom line profits wherever it's been installed. For users, Datapoint hardware has reduced out of pocket operating costs, eliminated the vexation and extra expense of input error, provided management with a surer control over company operations and allowed efficient computerization of hitherto manually handled work assignments.

Visit us at booth 2224, INFO '75, New York

**TWO**



### **SOFTWARE**

Fact: a dispersed processor is only as good as its software. That's why Datapoint offers the industry's most extensive library of programming languages, utility and data communications packages, diagnostic routines and associated programs designed for dispersed processing usage.

This software has been created with the intent of making the effective use of Datapoint dispersed equipment as simple and uncomplicated as possible, especially for clerical personnel in field office facilities who may not have a computer background.

Proven Datapoint programming languages include: *DATABUS* which offers high-level business language features for both data processing and data entry applications. (DATABUS programs written for the 1100 Intelligent Terminal are upward compatible with our multi-user DATASHARE system.) *DATAFORM*, a special and again easy to utilize language designed for data entry activities which can be employed by a secretary or clerk without special training. *RPG II*, the IBM-standard business language which enables users to take existing RPG II programs and run them virtually unmodified on Datapoint equipment. *BASIC*, the well known interactive scientific language, and *DATAPOLL*, a data communications language which permits easy error-free automatic data transmission between field work stations and home office facilities. In addition, our DATASHARE multi-programming, multi-terminal system permits a Datapoint dispersed processor to act as a "computer utility" resource for as many as 16 work station terminals for both data entry and data processing tasks.

For maximum efficiency, each Datapoint system operates under sophisticated Operating Systems such as DOS (Disk Operating Systems) and CTOS (Cassette Tape Operating Systems). These Operating Systems offer powerful utilities and easy file management. Files are completely dynamic, and users can add, delete and merge data files using simple commands.

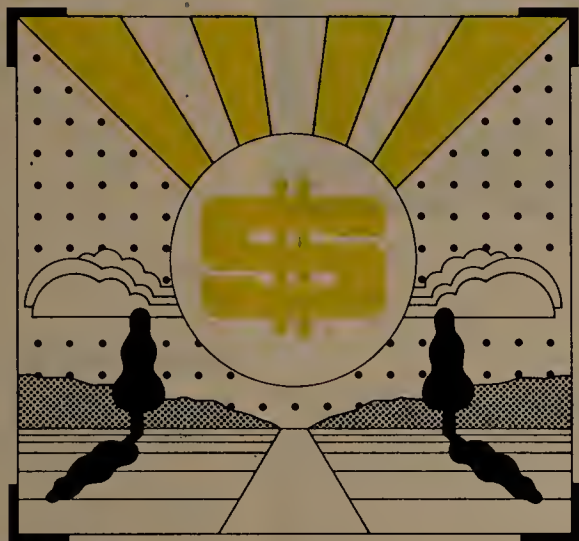
Datapoint software is functional; it's designed for use in basic program creation under demanding professional circumstances and yet can be quickly assimilated and utilized by inexperienced personnel. It's comprehensive; all dispersed user situations are covered by some portion of its capability. Best of all, Datapoint software is available now. We're not talking about software that's "under development"; we're talking about proven, in-use programs. That's a major difference between Datapoint and our competitors.



# Big Four

## Leadership in Dispersed Data Processing

**THREE**



### PRICING

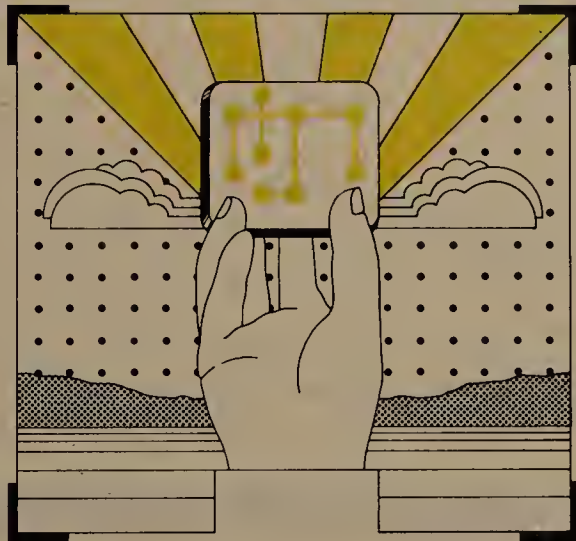
Unquestionably, Datapoint has led the way in providing a sophisticated computer capability for applications and in field office environments that only a few years ago would have seemed incredible. We've achieved the same sort of breakthrough in the pricing for these products. We've been able to bring sophisticated equipment and software within the economic reach of the dispersed user by taking full and progressive advantage of state of the art advances in solid state technology and by improvements in data communications capabilities. For example, the typewriter-sized Datapoint 5500 Advanced Business Processor with up to 48K user memory based on the new LSI memory technology affords a data processing capacity that only a few years ago would have required a sprawling mainframe computer. These advances not only permit us to offer a superior end product, thanks to our outstanding research and development and engineering groups, but they've also enabled us to deliver a much greater productivity bang-for-the-buck to our customers.

The highly integrated capability represented by Datapoint dispersed processors for data entry, local data processing, local data storage and file management, and data communications offers the business user a powerful work tool at prices as much as an order of magnitude below those charged by competitors for a comparable production capacity. Consider these actual monthly lease rates (two year lease with maintenance) for key items of Datapoint equipment, and bear in mind that in many user situations just a few of these units can handle a company's total data processing.

Datapoint 2200 (16K) . . . . .	\$392	Cartridge Disk . . . . .	\$328
Datapoint 5500 (24K) . . . . .	\$667	9-Channel Tape . . . . .	\$273
Diskette 1100 (16K) . . . . .	\$316	Datapoint 3600 Terminal . . .	\$ 70
300 LPM Printer . . . . .	\$452	Terminal Printer . . . . .	\$144
120 LPM Printer . . . . .	\$214		

For a DATASHARE configuration which might involve a number of the units indicated above, typical per station lease costs for a 16-station system can work out as low as \$260. We encourage you to work out the significance of these economics in your own organization. When it comes to dispersed data processing, no other company can better the price/performance capability offered by Datapoint equipment.

**FOUR**



### SERVICE

A sometimes neglected aspect of computer operations is field service. But this concern can't be ignored by designers and operators of dispersed data processing networks who may have equipment scattered literally all over the landscape, often in remote locations. At Datapoint we've taken a dual approach to service — first, we've designed and engineered a product line that combines ruggedness with ease of usage so that the need for service is minimized, and second, we've created a national customer service force that's geared to go anywhere at any time to meet the needs of our customers. In recognition of the extreme importance the service function has for our clients, especially those with facilities in remote locations, we've organized a large and highly professional customer service force, competent in all aspects of maintaining and servicing Datapoint systems and geared to fast, professional response to maintenance problems wherever they may occur. To make it possible for our users to make swift, certain communications with this service force, we've created the Datapoint National Customer Service Center which is staffed on a 24-hour day, 7-day week basis. By dialing a toll free number (national: (800) 531-5770, in Texas: (800) 292-5858) users are guaranteed a response to their needs for a local field service representative within one hour, and usually much sooner. The motto for our Customer Service force is "Good Service is Good Business," and we really mean it.

*The Big Four, Hardware, Software, Pricing and Service, constitute the fundamental reasons behind Datapoint's continued leadership in dispersed data processing. The more than 25,000 Datapoint dispersed processing systems now in productive use in field and home offices are tangible evidence of our success at emphasizing these fundamentals. For further information on Datapoint, its capability in dispersed data processing and how it can help your company, write or call the sales office nearest you or contact Datapoint, attention: Marketing Communications, 9725 Datapoint Drive, San Antonio, Texas 78284, (512) 690-7151.*

**DATAPPOINT CORPORATION**



The leader in dispersed data processing

• Tulsa/(918) 664-2295 • Washington, D.C./ (703) 790-0555 • **International:** TRW/Datacom—International/Los Angeles, California, TELEX 691286 (213) 475-6777  
• Sydney, Australia/(2) 922-3100 • Vienna, Austria/0222/36 21 41 • Brussels/3762030 • Rio de Janeiro, Brazil/222-4611 • Toronto/(416) 438-9800 • Copenhagen/(01) 966-366  
• Guayaquil, Ecuador/394844 • London/(1) 903-6261 • Helsinki/90-661 991 • Paris/(1) 657-13-31 • Hanover Germany/(0511) 634-011 • Rotterdam/(10) 216244  
• Hong Kong/(5) 243-121 • Tel Aviv, Israel/(03) 410565 • Milan/316 333 • Tokyo/264 6131 • Beirut/348 340/1/2 • Kuala Lumpur, Malaysia/73901 • Oslo/153490  
• Makati Rizal, The Philippines/877294 • Singapore 92765 • Tehran, Iran/8538857 • Johannesburg/724 9301 • Las Arenas, Spain/63 64 00 • Stockholm/(8) 188295  
• Lyss Berne, Switzerland/(32) 844240 • Taipei, Taiwan/768-1114



## Mini, 'Beneficial Arson' Aid Forest Fire Research

MACON, Ga. — One way to fight forest fires is with forest fires — controlled fires which remove hazardous natural fuels that build up on the forest floor.

And one way to develop this art of beneficial arson — while also controlling the billowing smoke clouds produced — is to set fire to miniature table-top forests and study the resulting conflagration and smoke, using a high-speed scientific data collection and a minicomputer to analyze the data.

Forest management researchers at the Southern Forest Fire Laboratory here currently are focusing efforts on determining the fuel and weather conditions for minimum smoke production in "prescription" fires. This entails chemical analysis of the smoke as it travels downwind from the fire.

A specially constructed combustion room houses the table on which the actual miniforest beds are regularly created and then set ablaze. More than 50 sensors monitor the event, scanning at 1 second intervals, feeding data into the system.

The mini system collects,

processes and outputs the analysis in real time while simultaneously servicing four other laboratory stations engaged in related forest research.

The high-speed scientific data collection and processing system at this Department of Agriculture's Forest Service Laboratory employs a Hewlett-Packard 9600 computer system with 24K words of core memory, a 2.5M-word disk, analog-to-digital converter and several I/O devices such as tape drives, printer and card reader.

### Cubed Combustion

One key experiment conducted by Paul W. Ryan, research forester at the laboratory, involves arranging a table 3-ft by 4-ft in the combustion room (a 30-ft cube-shaped room) with typical forest fuels, such as pine needles, leaves, grasses and organic materials in various stages of decomposition or other understory materials of a timber stand, such as shrubs, vines and seedlings.

The slope of the table is set to represent the conditions under study; air temperature and humidity are preconditioned and



Ryan uses a syringe to obtain a smoke sample produced from a miniature table-top forest fire at the Southern Forest Fire Laboratory. A Hewlett-Packard 9600 minicomputer is employed to collect and process the scientific data.

fed into the room and the model is ignited.

The computerized solid-state

system has dramatically speeded the forestry research here, Ryan said. "We used to use an array of strip chart recorders. It took two weeks to reduce the data for each test fire, and we sometimes run several fires a day. We would then punch cards for input to the computer for analysis.

"Now I can review outputs while observing the fire, make adjustments and observe the effects," Ryan said.

## Cramer Designs Kits for Micros

NEWTON, Mass. — A ready-to-assemble microcomputer, available initially in three models, has been introduced by Cramer Electronics, Inc.

Termed Cramerkits, the products cost less than \$500.

Developed in concert with Microcomputer Technique, Inc. of Reston, Va., the specially designed kits come equipped with either an Intel 8080, a Motorola 6800 or a Texas Instruments TMS 8080 as the central processing unit.

Each kit includes (in addition to all parts except board and power supply) engineering documentation, literature, schematic diagram and programs recorded on a cassette tape.

The components and documentation package are said to enable a designer to design and fabricate a custom microcomputer to suit his specific needs.

Cramer is at 85 Wells Ave., 02159.

## Mini Bits

### 4K Memory Boards

#### Fit PDP-11/45, -50

MAYNARD, Mass. — Digital Equipment Corp. now has a memory matrix board with 4K words of bipolar parity memory for PDP-11/45 and PDP-11/50 computers.

Called the MS11-AP, the solid-state memory unit permits savings of approximately 60% over previously available bipolar memory from DEC for these computers, the company said.

In the matrix board arrangement, up to 32K words of bipolar memory can be installed in a PDP-11/45 or -50.

Bipolar memory permits computer operation at speeds up to 3M instruction/sec, approximately three times as fast as core. Speeds 40% faster than MOS semiconductor memory are standard with bipolar memory, DEC said.

The unit is priced at \$19,700 in 16K-word units.

### Data Miser Links to PDP-11

SCOTTSDALE, Ariz. — The Data Miser DM06 from International Memory Systems is a 200 track/in. moving-head disk drive available as a plug-compatible replacement for the Digital Equipment Corp. RK05 as a daisy-chain expansion for PDP-11 users who have the RK11/RK05 combination.

The Model DM06 has a capacity of 5M bytes and is plug-compatible with the DEC RK11 and all standard DEC operating systems.

The complete electronic interface is contained on a single 10-in. by 10-in. board.

The unit is priced at \$2,950 from the firm at 14609 Scottsdale Road, 85260.

### Duplicator/Verifier

#### Added by Facit-Addo

GREENWICH, Conn. — The Series 4000-Option 10A duplicator/verifier from Facit-Addo, Inc. is said to be capable of duplicating and verifying a wide range of paper/Mylar tapes from five through eight channels.

The system consists of a tape processor, two 4020 readers, one 4070 tape punch and tape handling spoolers.

The duplicator/verifier performs two functions. It duplicates punched paper/Mylar tapes and then checks the duplicate by comparing it to the original.

The unit is priced at \$10,995 from the firm at 66 Field Point Road, 06830.

# APL'ers

**We have the only desktop computer  
that speaks your language... APL  
and we want to tell you all about it.**

Now it's here at last, the world's first low-cost desktop APL full-service computer... the MCM/70. In addition to a complete APL interpreter, it features a virtual operating system, battery-operated power-fail protection plus a communications subsystem to communicate with other APL computers and terminals.

Essentially compatible with APL/SV, MCM/APL extensions include: executive primitive, dyadic null primitive, advanced function editing, extended primitive formatting, and QUAD system functions and variables. The keyboard layout is IBM 2741 compatible... plus start and control keys.

If you're truly an APL'er, you'll want to know all about the MCM/70 and how it can become an integral part of the work you're now doing in this powerful, concise language. If you're a true APL'er, you'll be quick to see the advantages the MCM/70 offers in terms of: ■ Personalized computer power right at your own desk ■ Off-line freedom to spend all the time you need on a project without tying up mainframe equipment. ■ Capability to develop your own files of programs and data with complete security. ■ Cost savings on large system time usage.

You can understand what a breakthrough the low-cost, desktop MCM/70 represents! For the full story send in the coupon today and we'll send you full particulars plus a complimentary MCM/APL pocket language guide.

If you're an APL user, we want to hear from you!

**MCM MICRO COMPUTER MACHINES, INC.**  
133 Dalton Street  
Kingston, Ontario, Canada K7L-4W2  
(613) 544-9860

Please send me full information about your new APL desktop MCM/70 computer plus a complimentary MCM/APL pocket language guide.

Name \_\_\_\_\_ Title \_\_\_\_\_  
Company \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_  
Phone Number \_\_\_\_\_

**WILLIAM MARION COMPANY, INC.**  
P.O. BOX 309 • HACKENSACK, N.J. 07602

N.C.R.  
31, 32, 41, 42 etc.  
BURROUGHS  
"L" TC 500, TC 700  
I.B.M.  
UNIT RECORD MACHINES

**BUYING**

**SELLING**

029's & 059's  
immediate delivery

ALSO: 026 • 056 • 082 • 083  
084 • 085 • 088 • 402 • 403  
407 • 514 • 519 • 548 • 552  
557 • ELIGIBLE FOR IBM M/A

FOR MORE INFORMATION CALL- (201) 343-4554



## Cuts Record Management Costs

# System Ups Retailer's Efficiency 20%

NEW YORK — Pinpointing a sales slump before it reaches crisis proportions is one of the primary benefits minicomputers are providing retail supermarkets, according to the president of a 16-store chain here.

"With skyrocketing labor costs and the increase in food prices, record management is becoming one of the few areas where supermarkets can actually minimize costs," said John Catsimatidis, president of Red Apple

Supermarkets. "And the mini-computer permits us to have a lot more control over our operation, which will in turn benefit the consumer.

"In fact, the Basic/Four Corp. system we installed a year ago has improved our efficiency by about 20%. For example, we have 525 employees, and it used to take us three days to do the payroll with the old basic accounting methods we were using.

"Now, however, it only takes an hour to do the payroll, once the input is provided."

But where the computer has really proved invaluable is in assessing what happens in each of the 16 stores at a given time and then comparing the data. Each store is broken down into 20 departments. If there is an 8% decrease in sales in one department, the minicomputer lets management zero in immediately on the trouble spot.

## Twin Minis Record Stock Transactions

STOCKHOLM, Sweden — Buying and selling at the stock exchange generates a complex amount of fast-moving data which requires sophisticated equipment for efficient distribution. With the twin minis at the Stockholm Stock Exchange, banks and brokers throughout

## Agency Uses DP To Study Demand For Wool Goods

LONDON — With its share of the world market for textile and carpet goods constantly under assault by synthetic fiber products, the International Wool Secretariat (IWS) has enlisted a mini to assure continued prosperity for thousands of dealers of wool products in more than 40 countries.

Headquartered here with branches in 27 countries, the IWS is a nonprofit organization that builds markets and stimulates demand for wool and wool products around the world.

To assist in worldwide market analysis, promotional efforts and product research, IWS purchased a PDP-15 computer system from Digital Equipment Corp. Using punched cards for data entry and magnetic tapes as the primary storage medium, the system produces scheduling, accounting and statistical reports on a budget limited by the ever-changing fortunes of IWS' sponsoring organizations — wool growers in South Africa and Uruguay, producers and government agencies in Australia and New Zealand.

### Two Surveys Yearly

Twice each year a survey is conducted among Woolmark licensees to collect sales and order information. The data is analyzed by computer to pinpoint trends in consumption and demand for quality garments and other goods, broken down into product, geographical area, pricing, etc.

Results of these surveys and returns enable the IWS to select geographical and product areas where the agency should expand or contract its promotional effort in global markets for men's, women's and children's wear, knit wear, carpets and home furnishings. The computer produces a proposed media schedule, showing each IWS branch where advertisements should be placed during the next half-year period.

Sweden will be able to receive information on every transaction on the exchange within seconds after the deal has been concluded.

For more than half a century, roll call transactions at the exchange have been handled by numeric terminals used to submit bids. When buyer and seller agree, a bell rings and the deal is flashed on a display board actuated by electromechanical relays.

But this is strictly a bidding system. Until the two Data General Nova 2/10s went into operation, deals had to be recorded manually by clerks using pen and paper. For distribution of the results, brokers in the Stockholm area have been able to subscribe to a special telephone service that enables them to listen to the floor proceedings as they take place. Ticker tapes have never been used in Sweden. Outside of Stockholm a special newscast, broadcast live from a studio in the stock exchange building, gave results.

But with the Nova system, the two record clerks use keyboard terminals for on-line recording of transactions.

When the system is fully operational this fall, any brokerage office in the country will be able to connect a terminal for real-time display of transactions. And at the end of the session, the day's stock list with turnover

figures and most-traded-issues information will be sent out to those who have printers installed.

Some of the biggest deals, however, take place during floor trading after the official session ends.

This used to be a noisy affair with much waving of papers and most-traded data being chalked up on a blackboard. With the Nova installation, a display screen has replaced the blackboard, and broker representatives submit their bids quietly from their booths, using terminals.

The system was designed and programmed by AU-System AB, a local software house. In all, about 25 terminals have been installed in the building. The system uses a Nova 2/10 with a second unit for backup, 2M bytes of disk storage, magnetic tape, cassette tape and a large multiplexer.

"These two Novas give us exactly what we need and no more," said Gosta Lindberg, first secretary at the stock exchange. "We spent a couple of years looking into various alternatives and had a number of offers from the large computer firms. Most of them suggested giant systems. We would never have been able to make full use of them. This gradual installation of a mini-computer facility is much cheaper and seems just right for us."

Model 33ASR with dial-up set and complete maintenance service for \$85 per month on 1-year lease. (Slightly higher for 90-day lease.)



## RCA opens up a new line to Data-Phone™ Teletype\* users

Now — lease Teletype equipment from RCA for just \$45 per month on 1-year lease (send/receive model 33KSR) including maintenance. With dial up set, only 90¢ a day more! (Slightly higher for 90-day lease.)

- Prompt installation and maintenance services by RCA technicians based in over 140 cities.
- Delivery through our coast-to-coast warehouse network
- Automatic unattended operation
- Built-in dial capability.
- Alternate voice communications
- Friction or sprocket (pin) feed
- Interfaces with Bell System 1001B (CBT), 1001D (CBT) and 1001A (CBS) or Western Union TAA for TWX use.

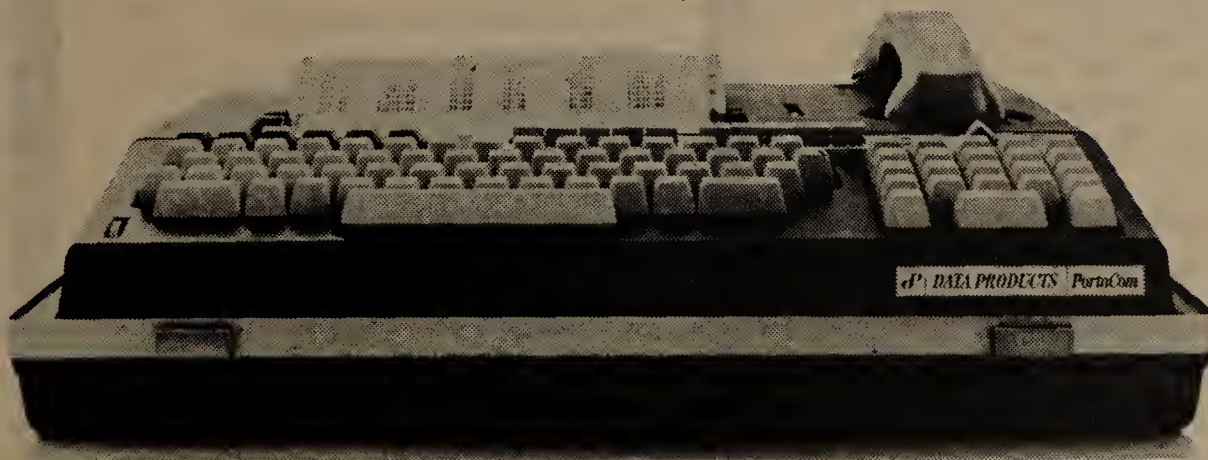
Call or write your local RCA representative about his complete line of data sets, telephone couplers, solid state selectors and multiplexing equipment.

RCA Service Company, A Division of RCA

- CAMDEN, N.J. 08101, Bldg. 204-2, Phone: (609) 779-4129
- PHILADELPHIA, PA. 19145, 3310 South 20th Street  
Phone: (215) HO 7-3300 (Pa.)
- ATLANTA, GA. 30336, 755 Selig Drive, S.W., Suite F, Phone: (404) 696-1616
- STRONGSVILLE, OHIO 44136, 20338 Progress Dr., Phone: (216) 238-9555
- JERSEY CITY, N.J. 07305, Liberty Industrial Park, 43 Edward J. Hart Rd., Phone: (201) 451-2222 (N.J.), (212) 267-1550 (N.Y.)
- SKOKIE, ILL. 60076, 7620 Gross Point Road, Phone: (312) 965-7550
- DALLAS, TEXAS 75207, 2711 Irving Blvd., Phone: (214) ME 1-8770
- MONTEBELLO, CALIF. 90640, 1501 Beach Street, Phone: (213) 685-3069

\*Registered service mark of AT&T Co.  
\*\*Registered Trademark of Teletype Corp.

**RCA**



## At \$1495 and 31 pounds, PortaCom is easy to take.

And so is our terminal's ASCII keyboard, separate numeric key pad, RS232 connector, built-in acoustic coupler, impact printer that uses standard paper, switch-selectable parity, full or half duplex, and 30-day delivery. Our discounts to schools and on quantity purchases aren't hard to

take either. Just pick up the phone and call Dick Samose collect at (203) 325-4161 today and get all the details, including our brochure. Dataproducts Corporation, 17 Amelia Place, Stamford, Connecticut 06904.

**Dataproducts PortaCom. Easy to take.**



# Invest in yourself this fall.

## Announcing the EDP Seminar Series Fall Schedule

The world of EDP is caught up in a continuous revolution. It's only 24 years since the first business computer made its appearance, and we've gone from tubes, batch processing and single-site giants to multiprogramming, time sharing, data communications, giant minicomputers and hundreds of other technological innovations that were unheard of only recently. Keeping up with this revolution is difficult, to say the least. And that's why we've created the EDP Seminar Series.

The EDP Seminar Series gives you practical applications of the newest advances in computer management. What you learn will save you time and money, because each course is geared to practical dollars and sense application.

Remember, these are seminars, not lectures, and you'll be learning by doing in a shirtsleeve atmosphere. Workshops are an important feature of the Seminars, and round table discussions and shop talk luncheons complement the seminar presentations. The workbooks and course materials are yours to keep, so you'll always have a handy reference to all you've learned.

We've selected leading experts from around the country to guide each of our Seminars. They are highly accomplished specialists in their fields, experienced in presenting their techniques to industry and management. If you're involved in one of the areas shown, you should attend the EDP Seminar Series this fall. What you learn will benefit your company, your installation, and you.

### Data Communications Course #1010 — Practical Data Communications Systems & Concepts

Dr. Dixon Doll, the nationally recognized teleprocessing consultant will lead this two-day seminar on the newest advances in data communications. The course covers areas like SDLC, HiD-LoD, DDS, newly approved major revisions to WATS, and the impact of Satellite Carriers.

Total Cost, including workbook, reference materials luncheons and continental breakfasts is \$350. Additional registrants from the same company qualify for the reduced rate of \$300.

<b>San Diego</b>	<b>Plaza Int'l Hotel</b>	<b>Sept. 29-30</b>
<b>New York</b>	<b>St. Moritz</b>	<b>Oct. 13-14</b>
<b>San Francisco</b>	<b>Dunfey's</b>	
	<b>Royal Coach</b>	<b>Oct. 20-21</b>
<b>Dallas</b>	<b>Hilton Inn</b>	<b>Nov. 10-11</b>
<b>Miami</b>	<b>Marriott</b>	
	<b>Miami Beach</b>	<b>Nov. 17-18</b>

### Data Communications Course #1020 — Advanced Teleprocessing Systems & Design

Also led by Dr. Dixon Doll, this course is a follow-up to course #1010. Special emphasis is given to techniques that minimize operating costs in commercial data communications networks. This three-day seminar covers procedures, approaches, and algorithms for evaluating and cost-optimizing network operations. Total cost, including an extensive set of customized course materials, is \$450. Additional registrants from the same company qualify for a reduced rate of \$400.

<b>Miami</b>	<b>Holiday Inn Airport Lakes</b>	<b>Dec. 1-3</b>
--------------	--------------------------------------	-----------------

### Legal Tools for Computer Contracting and Protection

Under the instruction of Roy N. Freed, a nationally known lawyer, author and educator in the field of computer law, you'll learn how to increase your advantage in dealing with vendors that supply your installation. As well as practical discussion and review of your own contracts, subject areas covered in this 2½-day seminar include: Negotiations, Contracts, Warranties, Avoidance and resolution of disputes, Security, Fraud, Taxation, and Techniques for handling any transaction. Cost for the entire seminar, including continental breakfasts, luncheons and all course materials is \$325. Additional registrants from the same company are charged only \$275.

<b>New York</b>	<b>Summit Hotel</b>	<b>Oct. 22-24</b>
<b>San Francisco</b>	<b>Hyatt Regency</b>	
	<b>San Francisco</b>	<b>Nov. 12-14</b>
<b>Chicago</b>	<b>Hyatt Regency</b>	
	<b>O'Hare</b>	<b>Nov. 19-21</b>

### How to Draft Effective Legal Agreements

This one-day seminar is a complete workshop for non-legal, technical people who may be called upon to draft legal agreements for their company. Also led by Roy Freed, this seminar covers a variety of formal agreements, their structure and the legal factors involved. You'll have all the basic skills necessary to write legal agreements, and you'll be able to spot items that really require the attention of lawyers.

Cost for the seminar, including luncheon and a complete workbook on the subject, is \$135.

<b>New York</b>	<b>St. Moritz</b>	<b>Oct. 8</b>
<b>Boston</b>	<b>Sheraton</b>	<b>Oct. 15</b>

### Data Base Design

Given in association with Leo J. Cohen and Performance Development Corporation, this three-day seminar is a package-independent examination of the techniques required for the design of effective data base systems. The seminar covers Effective Record Design, Physical Storage Techniques, Optimum File Organization/Indexing Techniques, File Integration, and much more.

Cost for the seminar, including course materials, continental breakfasts and luncheons is \$350. Additional registrants from the same company qualify for a reduced rate of \$300.

<b>New York</b>	<b>St. Moritz</b>	<b>Sept. 22-24</b>
<b>Denver</b>	<b>Denver Hilton</b>	<b>Dec. 1-3</b>

### Performance Evaluation and Improvement

Saul Stimler, author of *Data Processing Systems: Their performance, evaluation, measurement, and improvement* will lead this two-day seminar on measurement techniques designed to save your installation money. As well as system performance at your own installation, topics covered include: Criteria for quantifying performance, pencil and paper analysis of a system, Benchmarking techniques, Realtime, Batch and interactive time sharing systems.

Cost for the seminar, including continental breakfasts and luncheons and all course materials is \$250.

<b>New York</b>	<b>Summit Hotel</b>	<b>Sept. 29-30</b>
<b>Wash., D.C.</b>	<b>Marriott at Wash. Int'l. Airport</b>	<b>Oct. 20-21</b>
<b>Chicago</b>	<b>Hyatt Regency</b>	<b>Oct. 27-28</b>
<b>San Francisco</b>	<b>O'Hare</b>	
	<b>Dunfey's</b>	<b>Jan. 19-20</b>
	<b>Royal Coach</b>	

### How to Increase Programming Productivity

John W. Brackett, PhD, Vice President of SofTech, Inc., will lead this two-day seminar for technical managers on the state of the art of Software Engineering. Under his direction, you will learn how to: create more precise and visible analysis and design; reduce integration problems; improve software reliability; incorporate visible outputs into the software development cycle; increase programmer productivity; and improve programming management methods. Topics covered include: Structured programming; Top-down analysis, design, implementation; and Chief Programmer teams. Cost for the entire seminar, including continental breakfasts, luncheons, and all course materials is \$300. Additional registrants from the same company are charged only \$250.

<b>New York</b>	<b>St. Moritz</b>	<b>Oct. 6-7</b>
<b>San Francisco</b>	<b>Berkeley Marriott</b>	<b>Nov. 10-11</b>



**THE EDP  
SEMINAR  
SERIES**

Sponsored by **COMPUTERWORLD**  
Managed by **THE CONFERENCE COMPANY**

To: **Ed Bride, Vice President, Editorial  
Services, The Conference Company, a  
division of Computerworld, Inc.  
797 Washington Street,  
Newton, Mass. 02160**

Please send me a brochure and registration form for the following seminar(s):

Title \_\_\_\_\_

City in which you would  
probably attend. \_\_\_\_\_

☐ Many of our seminars are available for private, in-house use at a greatly reduced per-attendee rate. For full information on bringing any seminar to your facility, check here.

Name \_\_\_\_\_

Title \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Phone ( \_\_\_\_\_ ) \_\_\_\_\_

**NOTE: If time is short, you may reserve space at  
any seminar by calling collect. Call  
Miriam Ober at (617) 965-5800.**



## CI Notes

### Finalco Arranges Lease Plan

VIENNA, Va. — Finalco, Inc. has arranged \$22 million of lease financing for 27 computers operated by the Northwestern Bell Telephone Co.

The lease underwriting covers presently installed Honeywell computers used by Northwestern Bell for its internal DP.

Most of the equipment is being converted from a Honeywell extended lease to seven- and nine-year Finalco leases.

### CA Signs \$7 Million OEM Deal

IRVINE, Calif. — Computer Automation, Inc. (CA) has received orders for over \$7 million worth of Naked Minis from four of its large customers, which President David Methvin views as a sign the OEM business has begun to improve.

General Computer Systems, Inc. submitted a \$2.4 million order for minis for use in its key-to-disk systems.

### CDC Quits Fare Box Production

WASHINGTON, D.C. — Control Data Corp. said it is stopping production of automatic fare collection equipment for the Washington Metropolitan Area Transit Authority (WMATA) and will lay off about 150 employees.

The contract between CDC and WMATA is the subject of litigation between the parties. The WMATA ordered CDC to cease production, which CDC said was in violation of the court's jurisdiction of the matter.

CDC said it was originally contracted to produce the entire system, but a subsequent WMATA contract for production of part of the system with a third party repudiated the contract with CDC.

### Decision Data Operation on Skids

HORSHAM, Pa. — Although Decision Data Computer Corp.'s manufacturing affiliate for the European market has been placed in receivership, the firm said it sees no effect on its European marketing program.

Production here "can and will be increased to meet both domestic and international commitments for the company's products," according to Loren A. Schultz, Decision Data president.

The Department of Commerce of Northern Ireland, which has an 85% equity interest in the unit, International Engineering Ltd., has withdrawn financial support.

Shultz said he does not anticipate any material adverse effect on Decision Data over and above the firm's investment in the affiliate, which is less than \$200,000.

## Supershorts

3M Co. has licensed Information Terminals Corp. to manufacture 3M's 1/4-in. tape cartridge, to be called the TC2000.

Entrex, Inc. has donated a Data General Corp. Nova to the Southern Maine Vocational Technical Institute in South Portland, Maine.

Boeing Computer Services and Cubic Data Systems have agreed to pool their equipment and marketing efforts for DP services in the San Diego area.

NCR is preparing to announce Cobol for its 8200 system.

### Correction

Tymshare, Inc. has reached an agreement in principle for the acquisition of Major Computer Corp., Jericho, N.Y. The Jericho firm has not yet been acquired [CW, Aug. 20].

## Worth \$210 Million in '76

# IBM-GSA Contract Ends Sole Sourcing

WASHINGTON, D.C. — The General Services Administration (GSA) will award IBM a contract worth \$210 million but limited to installed equipment only for fiscal year 1976.

Under the contract, no new IBM equipment may be ordered — not even a tape drive — but features that do not upgrade a CPU, such as a floating point, may be rented or purchased, according to Theodore D. Puckorius, commissioner of GSA's Automated Data and Telecommunications Services.

Any new CPUs or peripheral gear must be obtained through competitive bidding.

Federal agencies may continue to rent installed systems, purchase certain rented equipment and obtain software and maintenance at 1975 prices until Jan. 1, Puckorius said.

At that time, government rental and maintenance prices will revert to commercial rates.

In cases where an agency needs IBM equipment for reasons of system compatibility, GSA will award a waiver requiring the agency to invite bids for that IBM hardware from the third-party industry as well as IBM.

In explaining GSA's reasons for limiting IBM's Automated Data Processing (ADP) supply contract, Puckorius said "there has been concern on the part of users and some industry people that IBM was getting favored treatment since we were negotiating with them after the final deadline had passed" [CW, June 18].

IBM failed to meet the Feb. 28 deadline

set by GSA for submitting bids for the federal supply schedule.

In view of this, "to allow the company to bid on a full schedule would have been unfair," Puckorius said, "but at the same time, we had to support our present equipment base," estimated to be worth about \$1.5 billion.

The government owns 1,060 various

IBM systems, valued at \$1.128 billion, and rents 303 IBM systems, worth about \$419 million, sources estimated.

The final contract decision for 1976 is retroactive to July 1, 1975 and will run until Sept. 30, 1976. This one-time only, 15-month fiscal year was adopted as a means of shifting future fiscal years to an Oct. 1 starting point.

## Lessors Get Wedge Into Agencies

By Nancy French

Of the CW Staff

The DP supply contract signed recently by IBM and the General Services Administration (GSA), which contains no price list for new equipment, is seen as a breakthrough for third-party industry members as well as other mainframers seeking government business.

Under the contract, all new systems must be competitively bid on a case-by-case basis; there will be no more waivers for purchasing directly from a supply schedule. Even if an agency needs IBM gear for reasons of compatibility, for example, bids must be let not only to IBM, but also to members of the third-party industry.

After Jan. 1, when the contract calls for the federal price list to revert to commercial rates, third-party lessors will be able to compete on even ground, one lessor said.

At that time, "we will no longer be at the disadvantage of having to pay

IBM's higher commercial prices for systems and then leasing them back to the government at rates below IBM's 8% government discount," he said.

Sentiments expressed by third-party dealers were summed up by Charles Barry, Comdisco's vice-president of government sales, who said, "I think it's great the government is finally going to take advantage of the money that can be saved doing business with the third-party industry."

"The only thing GSA could have done better would have been to add a clause requiring all agencies to review present equipment leased from IBM to determine whether they could get a better deal elsewhere," he said.

"By the way," Barry added, "that's already a regulation, but it isn't being enforced."

Jim Benton, executive director of the Computer Lessors Association, agreed, providing "the agencies play it straight and put their bids out on the street. If

(Continued on Page 28)

# Firms With One Product Area Most Profitable: IDC

By Molly Upton

Of the CW Staff

WALTHAM, Mass. — The most profitable firms in the independent peripheral manufacturing field in 1974 were either single product area firms selling to original equipment manufacturers (OEM) or communications interconnect firms, according to a report from the International Data Corp. (IDC).

Plug-compatible manufacturing firms fared lowest in averaging profit as a percentage of revenues, placing below a category termed "innovative end-user product firms," the study said.

Profitable firms were generally small with revenues between \$8.3 million and \$23.1 million, compared with firms with revenues of \$23.3 million to \$168.7 million, the study found.

Firms with revenues less than \$8 million were excluded, as were those related to mainframe manufacturers except for well-established subsidiaries that conduct business separately.

A single product area may be one of the following groups: keyboard equipment, disk/tape drives, memory equipment, printers, interconnect, autotransaction, graphics equipment, remote batch terminals and others, such as paper tape. However, within that group a company may offer a variety of products.

Ranked by descending order of revenues, Mohawk Data Sciences, California Computer Products, Inc., Memorex Corp., Ampex Corp., Dataproducts Corp. and Storage Technology Corp., were revenue leaders in 1974, the report said.

Centronics Data Computer Corp. took top place honors in percentage of profit with 19% from its printers, while Codex Corp. had 16.9% profit from its estimated revenues pertaining to the peripherals in the interconnect area.

Other firms with profits of 8% or more included Applied Digital Data Systems,

Inc. (Adds), 16.8%; Information International, Inc., 11.8%; Cogar Corp., 9.6%; Wangco, Inc., 9.3%; Milgo Electronic Corp., 8.5%; and Sycor, Inc., 8%, IDC said.

Taking all 44 firms considered by IDC, the weighted average profit was 3.4% and the median profit about 2.6%.

Categorized by type of equipment, interconnect firms led the profit percentage with 11%, printers were 9.3%; graphics, 6.2%; other, 3.9%; disk/tape, 2.7%; autotransaction, 2.6%; keyboard, 2.2%; and memories, 1.8% during 1974, IDC said.

The single product firms showed 4.9% profits compared with 1.7% for the multiproduct companies, IDC said, while companies with domestic marketing orientation averaged a 4.4% profit compared with those with heavily international marketing efforts, 2.1%.

Firms marketing to OEMs showed profits of 6.4% compared with end-user firms' 3.2%. Those that marketed to both showed a 1.8% profit, IDC figures indicated.

Revenues will nearly triple for the independent peripherals area between 1974 and 1979, jumping from \$2.3 billion to \$6.4 billion, the report said.

Although the relative rankings of revenues to the product areas will stay about the same, the fastest growing areas will be autotransaction, interconnection and remote batch, all of which will more than triple.

From 1974 to 1979, keyboard revenues will jump from \$700 million to \$2.125 billion, disk/tape from \$550 million to \$1.375 billion and memory from \$250 million to \$500 million, the report said.

Printers should grow from \$150 million to \$450 million, remote batch from \$150 million to \$550 million and graphics from \$150 million to \$300 million; interconnect and autotransaction each will grow from \$100 million to \$375 million from

1974 to 1979.

The "other" category will double from \$150 million to \$300 million, the report said.

Breaking the firms into categories such as OEM-only sales, end user sales — both nonkeyboard and keyboard, plug-compatible manufacturers and "unique," IDC found the six firms in the OEM-only group averaged an 11.9% profit percentage of revenues, with all companies profitable in 1974.

The second most profitable group consisted of nine firms that have nonkeyboard products and sell to end users. The average percent of profit was 5.5%. Two of them, Docutel and Lundy, sustained losses in 1974.

A third group, with keyboard products selling to end users, included 10 firms with an average profitability of 3.1%. Sycor was the leader with 8%, followed by Datapoint, 7%; Incoterm, 6.6%; MSI, 5.9%; General Computer, 4%; Entrex, 1.8%; Decision Data, 1.7%; Inforex, .6% and Computer Machinery Corp. and Hazeltine.

In the plug-compatible area, seven of the 13 firms lost money, and none of the firms appeared in the high profitability group.

The average profit was 2.4%, boosted by Storage Technology Corp.'s 7% earnings.

The average profit is overstated, IDC observes, since those firms which lost money were figured at a 0% profit rather than a negative figure. If the magnitude of loss were included, this group would likely have had an average loss, the study remarked.

The group of multiproduct, nonplug-compatible firms was comprised of six firms that averaged 2% profit, an average dragged down by Mohawk's poor performance.

Excluding Mohawk, the group averaged 4.2% profit.



# Wescon to Examine 'Next Thousand Days'

SAN FRANCISCO — A view of "Electronics in the Next Thousand Days" will be presented to attendees at the Western Electronic Show and Convention (Wescon) Sept. 16-19 in the San Francisco Civic Auditorium.

Over 32 sessions will focus on topics in the areas of applications, management, marketing and a diverse number of subjects under the category of "survey."

## Micros On Stage

Microcomputers will again be a topic of several Wescon sessions, including how to get started in microcomputers, hardware and software support, new developments in design aids, logic analyzers and recorders, applications and use in medical instrumentation.

Communications-oriented sessions will examine "Synchronous Data Link Control — Teleprocessing Tyranny or Plug-Compatible Progress?" It will feature both users and manufacturers, as well as a session on communications satellite systems.

Other technically oriented sessions will focus on instrument interfacing with the

Institute of Electrical and Electronics Engineers' (IEEE) standard bus and laser detection and ranging devices.

Attendees can also consider selection of a printer for a minicomputer or microcomputer system, automatic testing in the manufacturing process and electronic identification systems.

In the marketing arena, sessions will look at "Engineering vs. Purchasing: The Limits of Responsibility" and "Fielding a Winning Sales Team."

Sessions in the management area will include discussions on employment, stock ownership, plans for a high technology company and "Recipes for Success in the International Business Cookbook."

There will also be a session on "Promoting Women? What's the Problem?"

The sessions will convene at 10 a.m. and 1:30 p.m. beginning Tuesday morning and ending Friday morning.

Brooks Hall, location of the exhibits, is open 9:30 a.m. to 5 p.m. Tuesday through Thursday and 9:30 a.m. to 4 p.m. Friday.

In addition to the 32 sessions, there will be two special-fee seminars at the Towne-

house Hotel Sept. 17 and 18 on "Converting Your Ideas Into a Profitable Business" and "How to Start and Finance a New Business," respectively. The fee for each day-long seminar is \$50.

At a luncheon Tuesday, Daniel A. McMillan III, publisher of *Electronics*, will deliver the keynote address, giving an overview of electronics and the marketplace in the next thousand days.

On Thursday, the 21st annual Distributor-Manufacturer-Representative Conference will be held at the St. Francis Hotel, providing a conference within a conference.

The registration fee for Wescon is \$5. It is sponsored by the San Francisco Bay Area Council and Los Angeles Council of the IEEE and the Northern and Southern California Chapters of the Electronic Representatives Association.

Further information can be obtained from Wescon at 3600 Wilshire Blvd., Los Angeles, Calif. 90010.

## Interdata Expands Terminal Group

OCEANPORT, N.J. — Interdata, Inc. has expanded its Terminal Products Group into a business unit as a result of the acceptance of its Carousel product line, according to Daniel Sinnott, Interdata president.

James R. Folts, formerly director of product marketing, has been named general manager of the unit.

Folts said he expects monthly production of the 30 char./sec Carousel printer units to reach several hundred in 1976 and employment at the Randolph, N.J., plant to reach 100.

"We expect the terminal market to grow at a 50% annual rate," Folts said.

"Creating this separate business unit reflects our plan to serve that market aggressively. The Carousel is the first in a planned comprehensive family of terminal-oriented devices," he added.

# Modcomp Gets Second Nasa Pact, Restructures Operations Group

FORT LAUDERDALE, Fla. — Modular Computer Systems, Inc. (Modcomp) has received its second large contract in recent months from the National Aeronautical and Space Administration (Nasa), reorganized its operations group to better handle large network orders and laid off about 40 people in "redundant jobs."

The newest pact with Nasa calls for 73 Modcomp 11/25 systems, valued at over \$4 million, over a 21-month period. The systems will join other Modcomp systems at Nasa's Jet Propulsion Laboratory performing data handling and processing functions for the deep space network.

Modcomp was selected recently to provide systems for the Launch Processor System for the upcoming Space Shuttle program.

The restructuring creates divisions in manufacturing and systems. Each area is a separate cost center reporting to Robert

G. DiStefano, who was named vice-president of operations.

The move was in response to an increased demand for large networks of systems, according to Kenneth G. Harple, Modcomp president.

"Under the new organization, Modcomp will be better able to meet the demand for large, complex network and systems configurations without impacting the small systems business which has been primarily responsible for the company's spectacular growth during the past five years," he said.

The Manufacturing Division supplies standard products to end users and to the Systems Division, which is responsible for all systems engineering and special software as well as quality control.

The consolidation of about 40 jobs is an effort to maintain a profit level in the third quarter, a spokesman said.

(Continued from Page 27)

so, we're going to get some of that business."

Benton added, however, that "as an industry, we'll have to wait and see before really making a judgment. Oftentimes what GSA says and what the agencies actually do are way out of synchronization."

## No Sole Sourcing

David Pappert, Intel's vice-president and regional manager for federal marketing, said "we're delighted with this contract."

"For the first time, agencies won't have the alternative of sole sourcing entire computer systems off the federal supply schedule. We're also delighted that IBM's 8% discount, which worked to the third parties' disadvantage, will now be eliminated," he added.

Terry Miller, president of Government Sales Consultants, Inc., a firm that offers consulting services and seminars on DP procurement, praised GSA for not bending to agency pressure to let IBM submit a contract for new equipment after the deadline.

"GSA did a good job negotiating," Miller said, "certainly as well as anyone could have expected for the spot it was

in."

"It had a huge base of IBM equipment to protect, but it certainly wouldn't have been fair to the other vendors not to penalize IBM for failing to get their bid in on time," he said.

## GSA Wins

Miller pointed out that, when push comes to shove, GSA can and has imposed its will over IBM.

One example Miller cited was the fixed-price option clause issue back in 1967-68. At that time, GSA wrote a regulation requiring vendors to estimate and contract for five- and six-year systems lives and provide maintenance at a fixed price over that period of time, he explained.

After initially objecting to the terms, IBM complied.

## 'Egg on Its Face'

Benton, on the other hand, thinks GSA came out of this "with a little egg on its face." As he sees it, "GSA looked pretty silly when it backed down on its original deadline on the contract and had to continue to negotiate past the deadline."

"IBM, in effect, told GSA, 'We'll close you down. Send back your gear.' IBM is so powerful it could just about do that if it wanted to," he said.

While IBM has only 20% to 25% of the government's machines at the moment, those 370s "are going in by the truck load, and IBM had GSA in a very difficult position," Benton added.

Regardless of who actually signs agency system contracts, all agreed it would be IBM that wins the business in the end because third-party lessors have to buy the large 370 systems from IBM anyway. "So IBM gets cash out front, which will surely increase its earnings this year," Benton said.

## Contract 'No Bargain'

As for the contract itself, Miller observed "it's really no bargain. After Jan. 1, the government will be paying regular commercial prices for all its leased systems as well as for maintenance."

"If individual agencies go to third-party maintenance and leasing firms where the equipment is available, they will get better deals."

"Unfortunately, that won't be possible in the case of 370/168s because nobody's selling them but IBM," he said.

IBM did give the government a 1% discount in the form of a \$2.2 million special purchase option credit fund to use against the purchase price of machines agencies may wish to convert from rental to purchase, according to Miller, but IBM has included similar credit option funds in its annual federal supply contract in the past.

REAL TIME/SECURITY/PREVENTIVE MAINTENANCE/EXTERNAL LABELS/MOVEMENT CONTROL/SCRATCH CONTROL/CLEAN/

# TAPE

# LIBRARY

# MANAGEMENT SYSTEM

# - TLMS -

May we tell you more?

Gulf Oil Computer Sciences, Inc.

P. O. Box 2100

Houston, Texas 77001

713/228-7040



CLEAN INTERFACE/MULTIPLE CPUS/QUALITY CONTROL/OS/360/370/MFT/MVT/VS1/VS2/CPUS/



## Burroughs Gives Demonstration Of Pepe System

PAOLI, Penn. — Major portions of the Burroughs' Parallel Element Processing Ensemble (Pepe) system were recently demonstrated here to members of the U.S. Ballistic Missile Defense Advanced Technology Center and other government representatives.

The hardware portion of the Pepe system, being developed by Burroughs Federal and Special Systems Group under subcontract to System Development Corp., is valued at over \$6 million.

The system architecture includes three control units generating instructions for multiple processing elements which operate in parallel to achieve high-speed computations required for ballistic missile defense applications, according to Burroughs.

Delivery and installation of the complete Pepe system is scheduled for 1976.

## Orders & Installations

The Department of Chemistry at Revelle College at the University of California has ordered a V72 from Varian Data Machines. The system will control a centralized disk storage facility sharable by a network of laboratory minicomputers.

Ramco International, Inc. has installed a "Real-Time" conversational program from Grumman Data Systems Corp. to be used for inventory control of commercial airline parts and equipment.

Acts Computing has ordered Peripherals General, Inc.'s Honeywell/GE-compatible Disc Storage Systems to replace its current Honeywell equipment.

Ferry Morse, Inc. has ordered a Univac 90/30 to handle inventory control, forecasting, order entry, accounting and billing at the seed distributor's headquarters.

R.T. French has purchased rights to use the Adaptable Data Base System (Adabas) from Software AG.

Five university members of the Mid-Illinois Computer Cooperative will use a Control Data Corp. Cyber 70 Model 72 computer system installed at Southern Illinois University in Edwardsville.

American Express, Inc. has ordered 300 additional Addressograph Multigraph Computer Access Terminal Systems (Amcat). When installed, American Express' "Centurion" network will have 1,300 terminals.

Global Associates, a logistics support service group for U.S. government agencies, has installed a Univac 90/30.

Richmond College in Staten Island, N.Y. has installed a Burroughs B1726 system to be used for administrative operations in addition to student records and registration.

# POSITION ANNOUNCEMENTS

## BUSINESS INFORMATION SYSTEMS MANAGER (Production Systems)

Miller's growth is dynamic. We've had a 31% sales increase last year and a cumulative gain of 69% for the last two years.

To meet the challenge that is precipitated by this growth, it is essential that new, timely, accurate Production Systems be installed.

You will direct a staff of 8-10 Systems Professionals in implementing Production Systems at both the plant and corporate levels.

We are currently in the process of installing RJE terminals, S/7 and other related on-line systems for use in warehouse

control, inventory processing and production scheduling.

If your past experience reflects 5-7 years of successful implementation of high level Production Systems and a minimum of three years of direct Systems and Programming management, as well as a Bachelor's Degree, you should consider this opportunity.

Salary is excellent, benefits are generous and advancement opportunities are significant. For consideration, submit resume to: N. Williams, Dept. 8529C, Miller Brewing Company, 4000 W. State Street, Milwaukee, Wisconsin 53208.



An Equal Opportunity Employer M/F

## MARKETING REP. BANK DP SERVICES

We are seeking a professional to market Bank DP Services for one of Florida's largest and most aggressive banking groups. The successful candidate will be results-oriented with ambition, a proven track record, and sharp interpersonal skills.

A minimum of 2 years experience in marketing bank data processing services is required. We offer an attractive starting salary, paid relocation, complete company paid benefit program, and an all-year summer climate in Florida. Don't let this unique opportunity pass you by. Send your resume and salary requirements in complete confidence to our Personnel Officer.



Flagship Services Corporation  
4720 Cypress  
Tampa, Florida 33607

An Equal Opportunity Employer M/F

## HONEYWELL CUSTOMER ENGINEER

### Exceptional Opportunity

For maintenance & development of communication hardware, including in-house maintenance of a large Multi-System installation. Must have 5 years Series H-200's & H-2200's. Salary to \$17K plus company paid benefits and moving expenses.

Send resume to:  
CW Box 4467  
797 Washington St.  
Newton, Mass. 02160  
All resume's strictly confidential

## MOVING?

Please notify *Computerworld* at least four weeks in advance. Include both old and new addresses. When writing *Computerworld*, please enclose a recent mailing label. The code line on top may not mean much to you, but it is the only way we have of quickly identifying your records. If you are receiving duplicate copies, please send both labels.

COMPUTERWORLD, 797 Washington St., Newton, Mass. 02160

position announcements

position announcements

## SYSTEMS ANALYSTS PROGRAMMERS

Several openings in the administrative support area for persons with college degrees and from one to five or more years of relevant systems design and programming experience. Working knowledge of COBOL is required. Preference will be given to candidates who have demonstrated their effectiveness in designing/programming on-line administrative systems in a higher education setting. Annual salaries range from \$12,324 to \$21,924. Apply by September 19, 1975. Submit application/resume to:

James E. Forden  
Staff Personnel Officer  
California State University, Fresno  
Fresno, California 93740  
(209) 487-2360

An Affirmative Action/Equal Opportunity Employer

## PROGRAMMING METHOD'S PROPRIETARY SOFTWARE DIVISION (INTERCOMM, MINICOMM, BETACOMM and SHRINK)

Needs experienced System Programmers who will participate in support of our current and future products as Systems Engineers and/or Instructors.

Candidate must have a minimum experience level of 2-1/2 years solid assembler language, programming, JCL and system debugging under 360/OS or 370/VS operating environments.

Additional experience in two or more of the following areas is highly desirable: BTAM, VTAM, COBOL or PL/1, CICS or IMS-DC, VSAM, TOTAL, ADABAS, on-line system design and implementation experience.

These positions offer a broad experience potential in a diverse work environment. Our customers represent the major industries in North America and Europe. Travel requirements of support personnel are extensive and you must be able to work independently. Salary commensurate with experience.

Send resumes to:

Susan Lenane

**PMI** PROGRAMMING METHODS  
A Division of **GTE** INFORMATION SYSTEMS  
An Equal Opportunity Employer

1301 Avenue of the Americas  
New York, N.Y. 10019

## CYBERTEK COMPUTER PRODUCTS, INC.

is seeking E.D.P. Professionals interested in furthering their career. Opportunities exist in many cities throughout the United States. CYBERTEK® provides software, installation support, facilities management and consultant services to the Life Insurance industry.

Openings are available for System Engineers, Project Leaders and Account Managers. Applicants should be thoroughly versed in COBOL and BAL with three to five years experience in DOS or OS. Life insurance experience is highly desirable with particular emphasis on CFO, On-line systems and accounting. Exposure to RJE environments will also be beneficial. A college degree is preferred.

Applications will be held in strict confidence. Submit resumes and salary history to:

### CYBERTEK COMPUTER PRODUCTS, INC.

606 Wilshire Boulevard  
Santa Monica, Calif. 90401

## TELECOMMUNICATIONS TRANSMISSION ENGINEER

CHRYSLER CORPORATION is seeking a Telecommunications Transmission Engineer to design, install and maintain specialized transmission data and voice systems and to develop diagnostic capabilities for corporate telecommunications networks, both domestic and international.

B.S.E.E., or equivalent with 5-10 years hands-on experience in related telecommunications systems activities; experience with international record carriers or common carriers preferred; French or Spanish working knowledge desirable.

Send resume in confidence to: Personnel Department-Management Services Office, CHRYSLER CORPORATION, P.O. Box 1919, Detroit, Michigan 48231. Attn: CIMS 416-16-33.



**CHRYSLER CORPORATION**

An Equal Opportunity Employer



position announcements

position announcements

position announcements

position announcements

position announcements

# CAM

## Scientific Programmer Systems Analyst

We have an immediate need for an analyst familiar with FORTRAN or PL/1 industrial engineering applications for CAM.

Applicants should have a background in manufacturing engineering involving typical chip-making operations. This is an excellent opportunity to work with an outstanding computer application of an automated manufacturing planning system. Candidates should be familiar with 370 OS systems and have a working knowledge of large-scale over-laid programs.

We offer an excellent salary, a complete fringe benefit structure and a challenging opportunity. We will relocate the right candidate. Interested applicants should send their resume and salary history in strict confidence to:

Personnel Manager  
Milwaukee Gear Co.  
5150 N. Port Washington Rd.  
Milwaukee, Wisconsin 53217

**SR. PROGRAMMER/ANALYST  
INTERMEDIATE PROGRAMMER**  
Position open in expanding Christian humanitarian organization. Located in the Los Angeles area. Sr. Programmer/Analyst position requires experience in team leadership in programming and systems definition, general business applications, large data bases and proficiency in Cobol. Will assist in systems design and direct programming team. Intermediate programmer requires programming experience in business application using Cobol.

Send resume to:  
Director of Personnel  
World Vision International  
919 W. Huntington Dr.  
Monrovia, Calif. 91016

## SYSTEMS PROGRAMMER

Large corp seeks professional with IBM OS/MVT and OS/VS 2 exp. Will install operating systems, assist in T.P. design, data base planning and provide technical support to DP staff. Salary to \$22,000. Fee paid.

Contact Stan Durbas

**ROBERT HALF  
PERSONNEL AGENCIES**  
111 Pearl Street  
Hartford, Conn. 06103  
(203) 278-7170

## OS Systems Programmer

The University of New Mexico Computing Center has an opening for an experienced OS Systems Programmer. Configuration: IBM S/360 model 67, 2048K; running OS-MVT with HASP. Major job responsibilities: generate, maintain, modify, document and consult (all on OS). Requirements: Bachelors Degree, at least 3 years programming experience (one year of which consists of working as an OS Systems Programmer), knowledge of 360 architecture, assembler language and two high level languages. Starting salary range: \$14,123-\$17,014 per year. Send resume and salary requirements to: Director, Computer Center, University of New Mexico, Albuquerque, N. Mexico 87131.

## Explore career opportunities at Datapoint

an acknowledged  
leader in the dispersed

data processing industry. Datapoint can offer you the challenges and rewards of an exciting career with a company that recognizes and appreciates ability. We have an immediate opening in our Corporate Headquarters for a

## Software Instructor

Responsibilities will include the development and presentation of professional course work covering select segments of Datapoint software systems product lines. Some teaching and software experience preferred. Requires moderate travel.

**All interview and relocation costs paid by Datapoint.**

If you are looking for career development, rapid advancement, and a long term association with a company that has added important new dimensions to the business world of computing.

**We'll work on your future together**

please send your resume including salary history and requirements to Personnel Dept.

## DATAPOINT CORPORATION

9725 Datapoint Dr. San Antonio, Texas 78284  
an equal opportunity employer m/f

# Run With Us!

Whether you're buying, selling, hiring, swapping or looking — Computerworld classifieds work.

It's easy to advertise in Computerworld. Our rates are only \$49.70 per column inch. The minimum size ad is two column inches and costs \$99.40 per insertion, while extra space, should you need it, is available in half-inch increments.

**Four Sections Available**  
Computerworld classified ads are divided into four sections, as follows: Position Announcements, Buy/Sell/Swap, Time for Sale and Software for Sale.

**Ad closing dates.**  
Computerworld is published weekly dated Wednesdays, and the closing date for each issue (excepting holidays) falls on the Friday 12 days prior to issue date.

**To place your ad:**  
Send your copy, issue, date, size, and section desired, along with your check for the full amount (we must have payment in advance from first-time advertisers) to: Debbie Franchi, Classified Advertising, Computerworld, 797 Washington St., Newton, MA 02160. For further information, or a complete rate card, call Debbie at (617) 965-5800.



**COMPUTERWORLD**  
THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY

# RELOCATION

## FOR COMPUTER PROFESSIONALS

Many computer professionals are reluctant to move to their most favored area because of the many uncertainties involved.

National Computer Associates eliminates that concern. Our national network of offices was created for the sole purpose of providing assured and effective relocation for you. Thus, we can find you the position you want, where you want it, and before you actually move.

Contact our office nearest you . . . and get going!



## National Computer Associates

**CHICAGO**  
McCormick & Associates, Inc.  
386 North York Street  
Elmhurst, Illinois, 60126  
**CLEVELAND**  
McCormick & Associates, Inc.  
601 Rockwell Avenue  
Cleveland, Ohio, 44114  
**COLUMBUS**  
Thornwall-Delaney Associates  
287 East Stewart Avenue  
Columbus, Ohio, 43206  
**DALLAS**  
Data Processing Careers  
Suite 1109  
Stemmons Tower West  
Dallas, Texas, 75207  
**DETROIT**  
Electronic Systems Personnel  
1705 Fisher Building  
Detroit, Michigan, 48202  
**FLORIDA**  
Jim Harman & Associates, Inc.  
Suite 804, Rivergate Plaza  
444 Brickell Avenue  
Miami, Florida, 33131  
**HARTFORD**  
Compass, Inc.  
900 Asylum Avenue  
Hartford, Connecticut, 06105  
**LOS ANGELES**  
TaCS, Inc.  
3440 Wilshire Boulevard  
Suite 1007  
Los Angeles, California, 90010  
**MINNEAPOLIS/ST. PAUL**  
Electronic Systems Personnel  
801 Nicollet Mall, Suite 1716  
Minneapolis, Minnesota, 55402  
**NEW YORK**  
Botal Associates  
405 Lexington Avenue  
New York, New York, 10017  
**PITTSBURGH**  
Electronic Systems Personnel  
106 Lawyers Building  
428 Forbes Avenue  
Pittsburgh, Penna. 15219  
**SAN FRANCISCO**  
The Computer Resources Group  
Agency, Inc.  
303 Sacramento Street  
San Francisco, California, 94111  
**TULSA**  
Data Processing Careers  
Suite 10, Park 21 Building  
2626 East 21st Street  
Tulsa, Oklahoma, 74114  
**WASHINGTON, D.C.**  
ESP Systems Corporation  
Suite 210  
1211 Connecticut Ave., N.W.  
Washington, D.C., 20036

Our rapidly growing EDP Group offers the challenge of working with a team of professionals using large-scale computers on a variety of interesting projects.

# SCIENTIFIC PROGRAMMING COORDINATOR

The ideal candidate has been programming scientific applications for a least 5 years, has a BS and preferably an MS degree in Math, Engineering, or Computer Sciences and is thoroughly familiar with large-scale IBM computers. This person will serve as a programming specialist and will coordinate the effort of other programmers in support of engineering projects. The applicant will be responsible for project deadlines and for maintaining effective communications with engineers relative to project status.

This position requires a mature person with demonstrable leadership ability, who can assume the responsibility for technical direction of programmers.

# DATA CENTER MANAGER

This is a newly created position for a highly qualified person to assume total responsibility for operations in our expanding data center. Among the responsibilities of this position will be: scheduling, hardware evaluation, tape library, software archive, ordering of supplies and paper, and inventory control. You must have worked a minimum of 3 to 5 years in an IBM 360/370 OS or VS environment as well as possess significant supervisory experience. This is an outstanding opportunity for an individual of demonstrated ability to join a dynamic and growing organization.

# DATA BASE ANALYST

We are seeking an aggressive Senior Programmer/Analyst with a BS or MS degree to design and implement engineering data base software. You must have a minimum of 3 years experience, a working knowledge of at least 2 computer languages, and possess strong communication skills.

Familiarity with an assembler language and IBM 360/370 OS/VS are essential. Additionally, you must be capable of assuming increased responsibility as our work in this area grows.

TASC is a growth-oriented applied research firm which offers excellent benefits including profit sharing and salary commensurate with experience.

Please forward your resume including salary history in confidence to Mr. J. R. O'Hare. U.S. citizenship required

**TASC**  
THE ANALYTICAL SCIENCES CORPORATION

6 Jacob Way  
Reading, Massachusetts 08175  
an equal opportunity employer

# NCR

ACCOUNTING COMPUTER DIVISION

In considering the job you have today, you have to consider tomorrow. In fact, you have to consider a series of tomorrows that form your future.

NCR's Accounting Computer Division in Wichita offers opportunities for ambitious individuals who are interested in today and concerned about tomorrow . . . for Professionals seeking a pleasant working and living environment . . . for career minded people who are willing to be measured by their performance . . . for those who want personal growth, technical development, responsibility and diversity

## Systems Software Programmers

- FIRMWARE DEVELOPMENT
- MINICOMPUTER OPERATING SYSTEMS
- COMMUNICATIONS
- FILE MANAGEMENT
- ASSEMBLERS
- COMPILERS

We presently have openings for experienced Systems Software Programmers. Opportunities exist in the design, implementation and support of minicomputer operating systems, communications, file management, assemblers and compilers. Senior positions in processor design with emphasis on data communications and operating systems for business systems.

If you are qualified and interested in any of the above opportunities, please send complete resume including salary history and requirements to Mr. Ron Clarke, Professional Placement, P.O. Box 1297CN, Wichita, Kansas 67201.

An Equal Opportunity Employer Male/Female/Handicapped



position announcements	position announcements	position announcements	position announcements	position announcements
------------------------	------------------------	------------------------	------------------------	------------------------

Director of Computer Services

The City of Bay City, Michigan, is seeking applicants for the position of Director of Computer Services who will be responsible for managing our new Data Processing installation and for developing information services to serve the city administration. This position offers exciting growth potential and is ideal for an aggressive individual to fully utilize their data processing and managerial abilities.

Minimum prerequisites include: a baccalaureate degree with emphasis in data processing, minimum of three years of experience with business systems design, a knowledge of data base techniques, experience with both on-line and batch processing, experience with Univac hardware is desirable.

Salary range: \$15,235 to \$17,219 with excellent fringe benefits.

Please send resume including salary history to:  
**Personnel Department**  
City Hall  
301 Washington Ave.  
Bay City, Michigan 48706  
Phone (517) 893-7511  
Ext. 201

EQUAL EMPLOYMENT OPPORTUNITY EMPLOYER

**WANTED PROGRAMMERS/ANALYSTS**  
To work on sub-contract basis for manufacturers, independent software suppliers and computer users.  
Full time and part time requirements available in several parts of the U.S.  
Independent Computer Professionals Association can help you locate free-lance programming assignments in most any type computer application.  
For more information, contact:  
**Independent Computer Professionals Association, Inc.**  
P.O. Box 278  
Campbell, CA 95008  
(408) 378-5067

SYSTEMS ANALYST  
FAST TRACK

Highly profitable co located in Conn. seeks trained analyst interested in consulting. Candidate will assist in the installation of financial applications packages designed for minis. \$18,000 FEE PAID.

**ROBERT HALF PERSONNEL AGENCIES**  
330 Madison Avenue  
New York, N.Y. 10017  
(212) 986-1300

PROGRAMMER/ANALYST

The Lakeland Ledger, a New York Times subsidiary, needs a guy or gal skilled in Fortran and/or Assembler. A good background in business applications is essential, with newspaper production knowledge and exposure to DOS systems and TP being distinct pluses. We're about to move from the dark ages into the most sophisticated real-time VDT-based newspaper system in the world today. We offer excellent benefits, a starting salary strictly commensurate with experience and ability, and an unequalled growth opportunity. People with drive and vision should reply with a complete resume, including past and present salaries, to Bob Douglass, The Ledger, P.O. Box 408, Lakeland, Fla. 33802.  
*An equal opportunity employer*

McDonnell Douglas Electronics Company, a component of McDonnell Douglas Corporation has immediate openings in support of Data Exchange System (Voice Response)

SYSTEMS PROGRAMMERS

BS or advanced degree in Physics, Math or Engineering with at least 2 years experience in the design and programming of systems software (operating systems, compilers, etc.) Experience should include use of assembly or higher level languages.

COMPUTER MAINTENANCE ENGINEER

BSEE or Computer Science degree desirable with at least 2 years experience in digital computer maintenance and must be familiar with a variety of computer programming languages.

COMPUTER  
SYSTEMS DESIGN SPECIALIST

BS or advanced degree in EE, Physics, Math or Computer Science, with a minimum of 12 years experience in computer development, including digital computer design; experience in and familiarity with microprogramming, assembly and systems software; performance of systems trade studies to determine optimum systems required to fulfill requirements of specific market; configuring commercial systems for the data processing/data entry market.

ELECTRONICS ENGINEER

BSEE with 3 to 5 years current experience in central telephone exchange switching equipment. Must be conversant with cross-bar and modern solid state switching exchange. Experience in Time Division Multiplex also desirable.

TEST ENGINEERS

BSEE or equivalent with 3-5 years experience in digital logic design and testing. Hardware oriented with capability of resolving test problems by circuit analysis and general troubleshooting methods.

To investigate a challenging career opportunity with a well established company, send resume in confidence to:

**MCDONNELL DOUGLAS  
ELECTRONICS COMPANY**

2600 N. Third St.  
St. Charles, Missouri 63301  
*AN EQUAL OPPORTUNITY EMPLOYER M/F*

SENIOR SYSTEMS  
RESEARCH  
ANALYST

Expand your potential in a dynamic and growing state of the art environment by joining the Systems Research staff of one of the nation's largest multi-national financial corporations where top management is committed to information systems and involvement is wide ranging, impacting the entire corporation. Our systems staff has tripled and will continue to expand, offering ample opportunity for both lateral and upward mobility.

As a Senior Systems Research Analyst, you will define corporate automation

strategy in concert with a broad range of line managers, interfacing with bank management and a multi-functional Systems Division.

You should display a proven track record of accomplishment in systems or project management and possess the poise and flexibility to interface with top management — exhibit excellent interpersonal and written/oral communicative skills. A strong academic background including an MBA or equivalent degree is required.

If you meet these requirements and are interested in the challenge of expanding your potential, act now. Send your resume with salary history in complete confidence to Bill I. Hammond, Professional Placement.

 **CONTINENTAL BANK**  
CONTINENTAL ILLINOIS NATIONAL BANK AND TRUST COMPANY OF CHICAGO

Challenging Career Opportunity  
In Ann Arbor, Michigan

FIELD ENGINEER

THE CHALLENGE:

Perform emergency and preventative maintenance on our Xerox Computer Systems with Rapid Access Data Units, disc units, magnetic tape units, and line printers attached to the central processor.

THE QUALIFICATIONS:

Three years experience maintaining computers and computer peripherals. Experience on Xerox Systems is desirable.

Send resume in confidence to:

Arthur W. Johnson

**COMSHARE**

P.O. Box 1588  
Ann Arbor, Michigan 48106  
1-313-994-4800

*An equal opportunity employer*

Go a *Software Analysts*  
Long Way

Talk about moving fast, in just 5 years MODCOMP has grown from a newcomer to the fastest growing minicomputer company in the country. Our sales are increasing faster than any other company in our industry.

To keep pace with our fantastic growth, we are seeking software analysts who are highly motivated self-starters, capable of working independently. To qualify, you should have at least 2 years experience in operating systems, process control, networks, communications, and assemblers. Equally important, you must be able to communicate effectively at all levels. Computer Science or Math Degree desirable.

At MODCOMP, you will be working with top software specialists in a highly technical environment, for a company that is large enough to afford you every opportunity to grow, but small enough to insure that your personal achievements are quickly recognized and rewarded.

OPENINGS ARE AVAILABLE IN:

• FT. LAUDERDALE • WASHINGTON, D.C. • SAN JOSE, CA. • CHICAGO

For immediate consideration, please send a detailed resume, including salary history, in confidence to: Tony Walker, Modular Computer Systems, 1650 West McNab Road, Fort Lauderdale, Florida 33309.

*An Equal Opportunity Employer M/F*

**MODCOMP**  
SOLVING PROBLEMS WITH COMPUTERS.

In a Short Time



position announcements	position announcements	position announcements	position announcements	position announcements
------------------------	------------------------	------------------------	------------------------	------------------------

## SENIOR SYSTEMS ANALYST-PROGRAMMER

Immediate opening for applicant experienced in COBOL and some familiarity with Assembler, PL/1 and "Total" Data Base Management System.

Prefer a minimum of 4 years manufacturing systems experience on IBM 360-DOS. We offer an excellent starting salary, complete company paid benefit package and relocation expenses.

For confidential consideration, send detailed resume with earnings history to Ed Farmer.

### THE BUEHLER CORPORATION

9000 Precision Drive, Indianapolis, IN 46236  
An Equal Opportunity Employer M/F

## PROGRAMMER LEARN IMS

Major financial institution will train IMS if you have min 2 yrs PL-1/OS experience. 370/158 OS-VS. \$16,000. FEE PAID.

### ROBERT HALF PERSONNEL AGENCIES

**ROBERT HALF PERSONNEL AGENCIES**  
330 Madison Avenue  
New York, N.Y. 10017  
(212) 986-1300

## COMPUTER OPERATIONS SUPERVISOR

Immediate opening in small but expanding university computer center to supervise operations of IBM 1130 and peripheral equipment servicing academic and administrative applications. Operations and supervisory experience preferred. Salary commensurate with experience. Call or send resume to: Personnel Dept. Drew University, Madison, N.J. 07940. (201) 377-3000 Ext. 318.

## EDP Men & Women A Golden Opportunity

You can earn thousands of extra dollars while still retaining your present position by selling computer ribbons, computer tapes and typewriter ribbons. Manufacturer pays commission each month. Terrific repeat business. Write to:

CW Box 4374  
797 Washington St.  
Newton, Mass. 02160

## PROGRAMMERS

Rapidly expanding World-wide telecommunications equipment manufacturer has career openings for Professionals with experience in:

- \*ASSEMBLY LANGUAGE
- \*REAL TIME ENVIRONMENT utilizing MINICOMPUTERS for circuit switching.

Excellent rural Maryland location, minutes away from 2 major urban cultural centers. Excellent salary/fringes. Please send resume to S. Sheldon, INTERNATIONAL COMMUNICATIONS, Dept. 110, 998 West Patrick, Frederick, MD. 21701.

## STATE OF DELAWARE COBOL APPLICATION PROGRAMMERS 360/50 EDOS INSTALLATION

Opportunity available immediately with state government in financial/revenue applications working with Division of Revenue in Wilmington, Delaware. Candidate must have 3-4 years of programming experience in ANS COBOL. Degree preferred but not required. Teleprocessing and data base experience also beneficial.

Liberal employment benefits available. Salary range 10K-15K depending on qualifications.

Send resume including history in confidence to:

George I. Theis, Director  
Division of Central Data Processing  
Highway Administration Building  
Dover, Delaware 19901  
(302) 678-4835  
An equal opportunity employer

## OUTSTANDING SALES OPPORTUNITY

Leasing IBM 370 Systems Package\*  
With Independent Peripherals

We have immediate openings for experienced sales personnel. Must have five years sales experience (mainframe, leasing or peripheral). You will be marketing a full product line: IBM 370 mainframe; tapes; disks; printers; memories; and communications. Peripherals supplied by a leading midwestern independent manufacturer.

Commission earnings potential range from \$50,000 to \$75,000 annually.

Currently need men in the following metro areas: L.A., S.F., Atlanta, Chicago, N.Y., Boston, Phila., Wash. D.C., Detroit, Cleveland, Minneapolis, Dallas, Houston.

Send resume in confidence, or call:

### COMMUNICATION ASSOCIATES, INC.

P.O. Box 35446 TULSA, OK 74135  
(918) 627-4587

## Manager Manufacturing Systems

Prime responsibility is for manufacturing systems development and base data. This position will manage a staff to develop and implement programs in close contact with operating managers and corporate EDP department.

Requirements include substantial experience as Systems Project Manager in developing systems for manufacturing operations.

Tektronix, Inc., develops, manufactures and markets internationally recognized precision electronic measurement instruments, computer peripherals and related electronic instrumentation. Located near Portland, Oregon we are within a two hour drive from the Cascade Mountains or Oregon beaches. The close-by nature playgrounds and the City of Portland provide for a variety of recreational and cultural interests.

Salary is open. Benefits include liberal educational support, insurance, retirement and profit sharing programs.

Please send detailed resume to: Tektronix, Inc., Bill Eppick, P.O. Box 500-C87, Beaverton, Oregon 97077.

An equal opportunity employer



**TEKTRONIX**  
committed to technical excellence



## iowa beef is a cut above the usual bull.

We're Iowa Beef, the world's largest beef processor and we're on a corporate adventure. Expanding our data processing division with a fresh, progressive outlook, we are developing a completely new computer center equipped with sophisticated Honeywell level 66 hardware. If you have experience with Honeywell 6000 or level 66 hardware and a knowledge of GCOS and IDS, you can qualify for one of the following positions.

### SENIOR PROGRAMMER ANALYST

5-10 years experience in business systems programming and analysis. Degree preferred. Team leader experience helpful. Function includes developing computer specifications for on-line systems, and directing a team in project development.

### PROGRAMMER ANALYST

4-6 years experience in programming and designing COBOL business applications. Degree preferred. Duties include designing and programming software, utilizing terminals and modern programming techniques.

### PROGRAMMER

2-4 years experience with COBOL applications. Degree preferred. Function as a team member in developing modern business applications.

You're in for a thick slice of compensation, including an excellent salary and generous fringe benefit program with cash bonus and stock option. For an immediate interview, send a resume with salary history, in confidence, to:

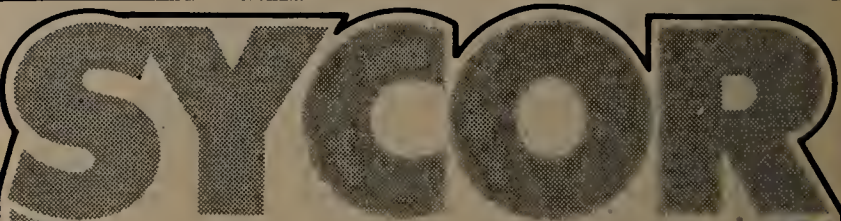
Professional Recruiter

P.O. Box 3350, Sioux City, Iowa 51101



**iowa beef processors inc.**

An Equal Opportunity Employer



## Join the Intelligent team.

Sycor, the pioneer in intelligent terminal systems, is looking for qualified individuals interested in a career in distributed data processing

### SALES

#### Sales Representatives

3-5 years of successful computer systems sales experience qualifies you for one of the highest paid sales teams in the industry. openings nationwide.

#### Systems Engineers

Individuals with 2-4 years of IBM telecommunications systems experience are needed to support our home office and nationwide field sales efforts

### PRODUCT SPECIALIST

#### (On-Line)

8-10 years EDP experience with extensive work in teleprocessing on large OS systems, experience in 3270 applications (CICS, IMS) desired

#### (Batch Systems)

5 years experience in communications systems with turnkey minicomputer or mainframe systems applications

### FIELD ENGINEERING

#### Customer Service Representatives

Nationwide openings for individuals with 2-3 years experience in the maintenance of data processing equipment, experience in communications desired

#### Field Engineering Specialists

Openings in Washington, D.C., Chicago and Ann Arbor for people with 4-6 years of IBM or equivalent systems and communications field engineering experience

#### Technical Writers

Openings in Ann Arbor for documentation specialists with 3-5 years experience in detailed field engineering manuals

### SOFTWARE DEVELOPMENT

#### Programmers

Individuals needed with working experience in multi-tasking operating systems for mini- and micro-computer systems, systems software development for distributed data base generation, control and retrieval, and advanced systems programming language computer design and development

## Make the Intelligent Choice

Join the leader. Please forward your resume with salary history to Personnel, Sycor, Inc., 100 Phoenix Drive, Ann Arbor, Michigan 48104. An Equal Opportunity Employer M/F









buy sell swap

**MAGNETIC TAPE**

	1600 BPI	800 BPI
	recertified	uncertified
2400	\$6.00	\$3.50
1200	5.00	3.00
seals	thinline	thickline
IBM	Memorex	Scotch

released from  
GEOGRAPHICAL Archives not  
work tapes  
(713) 772-5557 C.A.R.D.  
7575 Bellaire Blvd.  
Houston, Texas 77036

**FOR SALE**

Large quantity Analox and CDC line printers. GDI and Uptime card readers.

**RONDURE CO.**

Stan Shannon  
1224 Security Drive  
Dallas, Texas 75247  
(214) 630-4621

**FOR SALE  
OR LEASE**  
**370/155-CPU**  
**3 Chan.**

2 Meg-Cambridge  
for Oct. 75 Avail.  
Send Bids to  
CW Box 4407  
797 Washington St.  
Newton, Mass. 02160

Plastic Recycling Co.  
Wants to buy plastic tape  
canisters & reels to grind  
and make into garment  
hangers.

Edko Plastics  
Mr. Hutcheon  
(516) 546-1464

**BURROUGHS**  
**L5000**  
**FOR SALE**  
**BY OWNER**

Available Oct. 1. Billing, accounts receivable and payable programs. (608) 231-1381, or CW Box 4466  
797 Washington St.  
Newton, Mass. 02160

buy sell swap

**KEY-EXIMPORT CORP.**  
P.O. BOX 516 • CLOSTER, N.J. 07624

**WE BUY & SELL**

**NCR 31 • 32 • 41 • 42**  
**COMPUTRONICS**  
**BURROUGHS L, TC's,**  
**F & E SERIES**

*Call Us First!*  
OUR  
DIRECT LINE (201) 767-3444  
OR TOLL-FREE 800-631-1595

ONE DAY SHIPMENT  
from our 42,000 sq. ft. facility

**FOR SALE**

HIS 200/2000  
• MEMORY • CPU  
• PERIPHERALS  
**UNIVAC**  
• 1108-11  
• 70/45 SYSTEM  
• 9200 • 1004/5  
**IBM**  
• 360/50 SYSTEM  
• 360/30 • 2314  
**DEC**  
• PDP 8, 9, 10, 11, 15  
• CPU • MEMORY  
• PERIPHERALS

617-261-1100

**AMERICAN USED**  
**COMPUTER CORP**

P.O. Box 68, Kenmore Station  
Boston, MA 02215  
Member Computer Dealers Assoc.

**SALE OR LEASE**  
**370/155,**  
**370/145**  
**October**

IBM Computer Equipment  
Specialists in the West

**BAY AREA**  
**COMPUTER CORP.**

37 Quail Court, Suite 3  
Walnut Creek, CA 94596

415-944-0323

Jerry Olson  
Pat Baker

buy sell swap

**FOR SALE****HONEYWELL 115**

32K CP  
RDR/PCH  
Printer

4 TP. DR.  
1 DSK. DR.

Asking-\$75,000.00

**RING POWER CORP.**

P.O. Box 17600  
Jacksonville, Fla. 32216  
(904) 737-7730 Ext. 110 or 130

WANTED TO BUY

**MINICOMPUTERS**  
**& PERIPHERALS**

Any Quantity — Cash Available  
Call or Write  
for FREE Brochure

**NEWMAN****COMPUTER EXCHANGE**

3960 Varsity Drive  
Ann Arbor, MI  
(313) 973-1230

**ACS**

370 Leases  
All Models  
And Peripherals  
Flexible Terms

Member Computer Dealers Assoc.

**ACS Equipment Corporation**  
7126 Mullins  
Houston, TX 77036  
(713) 666-2122

For the End User's Answer When  
Buying, Selling or Leasing -  
IBM 360, 370, 1401, System 3  
Unit Record Equip.-Please  
Call or Write

**COMPUTER CLEARING**  
**CORPORATION**

5025 N. Central Expressway  
Suite 3046 Dallas, Texas 75205  
Telephone (214) 528-5087  
18 Years Experience, and —  
"We guarantee delivery at a fair  
market price."  
George Jachimiec, President

**CDC 3000**  
**SERIES**

—Memory  
—Channels  
—Input/Output  
Short term lease  
or sale

Contact: D. O'Connor



Computer Systems  
of America, Inc.  
141 Milk Street  
Boston, MA 02109  
(617) 482-4671

Want to buy from principal now  
for delivery within 120 days.  
360/40 G or H  
2314-01  
2821-02  
1403-02  
controller and (2) 60KB,  
800 BPI Tapes  
Send configuration with detailed  
specs, price and availability date.  
Consideration will only be given  
to offers which include serial  
numbers.

CW Box 4412  
797 Washington St.  
Newton, Mass. 02160

buy sell swap

**MUST SELL**

NEW: PDP 11/05, H.S. Paper  
Tape Reader, LA-36 Decwriter,  
Cabinet — \$5,900.  
DEC TM 11-EA 9 Track Mag  
Tape, Controller, Cabinet —  
\$5,900.  
Tektronix Scope Model #465  
with DM 43 & Cart — \$1,900  
Like New: H.P. 2100A with 9  
Track Mag Tape Drive, Controller  
and Cabinet — \$6,900.  
Centronics 101A Printer with  
PDP 11 Interface (L.S.  
11) — \$2,900.

Call: Charles A. Mathys  
(617) 935-8530  
Union Special Marcon  
400 North Franklin  
Chicago, Ill. 60610

**FOR SALE**

**CDC 3300**  
Excellent buy

Ship by January 1976

**CYBER 72**  
**UNIVAC 9000s**

We broker used CDC and Univac  
Systems.

**Gibbs Enterprises, Inc.**

Box A

Hingham, Mass. 02043  
(617) 878-8287

**WE WANT TO BUY**  
**Teletype® Model's**  
**28-33-35**

Modems — Couplers — Other Data  
Communication Equipment  
**WE ALSO SELL THE ABOVE**

Call or Write:

**DATA COMMUNICATION**  
**EQUIPMENT BROKERS, INC.**  
1878 Thunderbird Street  
Troy, Michigan 48084  
(313) 362-0470

**For Sale**  
**or Lease**

**158**

Model J s/n 23485

**145**

model I2, s/n 10906

**135**

model GF, s/n 61301  
contact Bill Pomeroy

**40**

model H, s/n 23341  
contact Gene Chappell

Continental Information Systems  
Midtown Plaza  
Syracuse, N.Y. 13210  
Member Computer Dealer's Assoc.

FOR SALE

**SYSTEM/3**

We also buy,  
sell or lease  
360/20 and 1130.  
**COMPUTER BROKERS, INC.**  
P. O. BOX 34055  
Memphis, Tn. 38134  
Phone 901/388-2550

**1130**  
**1401**

Systems & Components  
New Low Prices  
Purchase - Lease

CMI Corporation  
23000 Mack Avenue  
St. Clair Shores, Mich. 48080  
(313) 774-9500  
TWX 810-226-9708  
Member Computer Dealers  
Association

**WE BUY**  
**AND SELL**  
**AND INSTALL**

**NEW AND USED**  
**COMPUTER ROOM**  
**FLOORING**

Raised Floor Installation, Inc.  
19 Sebago St.  
Clifton, N.J. 07013

Tele: (201) 778-2444 in New Jersey  
(212) 594-4039 in New York  
(415) 546-9466 in Calif.

**PROFESSIONAL**  
**COMPUTER DEALERS**  
**IN THE WEST**

**SMI**

**SYSTEMS MARKETING, INC.**  
100 West Clarendon  
Suite 1562  
Phoenix, Ariz. 85013  
Bob Russell  
(602) 248-0457  
Telex 667-334

SALE OR LEASE

**IBM Unit Record**

024-\$350;	026-\$1000;
046-\$1800;	056-\$250;
077-\$500;	082-\$900;
083-\$2200;	084-\$2500;
085-\$1300;	088-\$2900;
188-\$12,000;	403-\$1000;
407-\$1500;	514-\$900;
519-\$1200;	548-\$2000;
552-\$1200;	557-\$3700;
	402-\$900;

**THOMAS COMPUTER**  
**CORPORATION**  
Suite 3807A  
600 N. McClurg Court  
Chicago, Ill. 60611  
(312) 944-1401

**Winning the**  
**Price/Performance**  
**Battle?**

You have a better chance with CIS.  
Call us with your situation,  
or check ours:

Want to buy: 168, 158, 155,  
65, 2860 memory  
For sale: 165, 158, 145, 135,  
40, 30, 2365, I/O set  
Lease terms available

**CONTINENTAL**  
**INFORMATION**  
**SYSTEMS**  
**CIS**  
**CORPORATION**

MIDTOWN PLAZA, SYRACUSE, NEW YORK 13210  
CIS EUROPE, SA 80 CHAUSSEE DE CHARLEROI 1060 BRUSSELS  
BRUSSELS TELEX: 26025 MEMBER CDA



**360-370**  
**market place**  
BUY — SELL — LEASE

**TLW COMPUTER**  
**INDUSTRIES INC.**

ATLANTA: 3570 American Drive, Atlanta, Ga. 30341  
404-451-1895 TWX 810-757-3654  
CHICAGO: 312-295-2030  
WASHINGTON, D.C.: 202-466-2470  
LOS ANGELES: 213-373-6825



buy sell swap

buy sell swap

buy sell swap

buy sell swap

buy sell swap

BUY SELL LEASE

IBM COMPUTERS — 1401's, 360/20's, 30's, 40's, 50's and 65's  
UNIT RECORD — 370's, and System 3's. All peripherals.  
FOR SALE — 360-30-64K System, 1403-2  
1442 N1, 2821-2, 2841, 4-2311

LONGHORN COMPUTER LEASING CORP.  
3131 Turtle Creek Blvd. Suite (1222)  
Dallas, Texas 75219 (214) 522-3170  
Member Computer Dealers Association

LEASE BUY SELL

DEAL WITH PROFESSIONALS IN PLACEMENT OF

PRE-OWNED 360/370 EQUIPMENT

"The Nations Largest Wholesale Dealer"  
Member Computer Dealers Association

COMPUTER WHOLESALE CORP.

SUITE 441-447 NATIONAL BANK OF COMMERCE (504) 581-7741  
NEW ORLEANS, LA. 70112

FOR SALE

GE 425  
32K words, 3 discs, 9 tapes  
(80KC-9 track), 2 printers,  
card reader, card punch

Call or write Gunnar Arvidson or Hakan Ostling

LANTBRUKSDATA

S-631 84 ESKILSTUNA,  
Sweden Phone: 016 211 70

buy·sell·lease·s/360·s/370

WE WANT TO BUY A 50

For Fall Delivery  
Check Our Price  
Call the Brokerage Division at:

(312) 671-4410

In Canada Call (416) 621-7060

dearborn

dc dearborn computer leasing company • chicago • toronto  
st. louis • cincinnati • member computer lessors assoc.

IBM 360/40

Ready For Delivery Oct. 1

CPU IO EQUIP IBM 360/40 2 Channel, 128K  
2540 Card/Read Punch  
1403 N1 Printer  
DISKS 2821-Model 1 Control Unit  
TAPES IBM 2314 A1 1x9 High Speed  
IBM Compatible 2401 Model 5 (4)  
Dual Density

We Will Buy

CPU'S (360/30-40-50, 370/135-145), Disks (IBM and IBM Compatible),  
Tapes (IBM 2401 or Telex Equivalent), Card Equip. and Printers (1403,  
1443)

In Oklahoma City, call Bill McCain  
Bill Rosellus (405) 848-8691

In Houston, call Al Smith  
Tenny Stannard (713) 444-0246

In St. Louis, call Ken Steinback  
(314) 727-7010

CSI COMPUTER SALES, INC.

901 Office Park Plaza/Oklahoma City, Oklahoma 73105  
Member Computer Dealers Association

WANTED TO BUY 360/50

Corporate Computers, Inc

115 Mason Street  
Greenwich, Conn. 06830  
(203) 661-1500  
Member Computer Dealers Association

FOR SALE

IBM 1419

Under Maintenance

CW Box 4464  
797 Washington Street  
Newton, Mass. 02160

3/4 OR 1 MEG OF 360/65

E.M.& M. Memory  
for sale or lease by owner  
A.M.G. Equipment  
Services, Inc.  
Ted Moulder  
(212) 747-0670

BUY, SELL LEASE, TRADE

IBM COMPUTERS  
All Types — 1401, 1440, 1410,  
1130, 1620, 360's, 370's, Sys.  
3 — All Peripherals.

UNIT RECORD EQUIPMENT  
All Models — Completely Refur-  
bished and under IBM M/A.

DISK PACKS  
Completely Recertified, Guar-  
anteed-Immediate Delivery, Lowest  
Prices.

Data Automation Co. Inc.  
4858 Cash Road, Dallas, Texas 75247  
(214) 637-6570 Call Collect  
"Member Computer Dealers Assoc."

IBM

UNIT RECORD EQUIPMENT

Buy — Sell — Equity Lease  
026 056 082 077 514 552 402  
029 059 083 085 519 548 407  
Also Other IBM Punch Card  
Equipment.

1620 & 1130

Components or Systems  
Guaranteed Eligible for IBM M/A  
Immediate Delivery  
Payment Plans to fit your Budget  
CALL COLLECT  
CMI Corporation  
23000 Mack Avenue  
St. Clair Shores, Michigan 48080  
(313) 774-9500  
TWX 810-226-9708  
Member Computer Dealers Assoc.

FOR SALE

AVAILABLE MID OCTOBER

(6) 1403-N01 Printers  
Serial #'s 33854  
38412  
34112  
39750  
36211  
34908

(6) 2821-002's All with 1100 LPM  
Serial #'s 20891  
21096  
21206  
21649  
23182  
51091

FOR SUB LEASE  
360/50 — 100 Serial 11470  
Features: 6980, 6981, 6982, 7920  
1052-007 Serial 52584  
AVAILABLE OCTOBER '75

PRINCIPALS ONLY  
Contact  
ADP  
405 Route 3  
Clifton, N.J. 07015  
(201) 472-1000 Ext 400 OR 562

BUYING OR SELLING GO GREYHOUND



Consider us your computer resale specialists. Our staff  
is available to assist you rapidly in buying, selling,  
trading, or leasing computer equipment. Just call:

New York Dick Ventola (914) 949-1515  
Chicago Pete Ahern (312) 751-5430  
Dallas M. W. "Bill" Tucker (214) 233-1818  
Phoenix Tom Takash (602) 248-5978  
San Francisco Henry Paulson (415) 989-4023

Greyhound Computer Corporation Greyhound Tower Phoenix, Arizona 85077

BUY-SELL-LEASE BUY-SELL-LEASE BUY-SELL-LEASE BUY-SELL-LEASE

DATASERV

FOR LEASE 370/158

2 MEG, 5 CHAN.,ISC

AVAIL. FEB.-MARCH,'76

dataserv equipment inc. (612) 560-5450  
6820 SHINGLE CREEK PARKWAY  
MINNEAPOLIS MINNESOTA 55430  
TWX 910-576-2900  
Member Computer Dealers Assoc.

SELL-LEASE BUY-SELL-LEASE BUY-SELL-LEASE BUY-SELL-LEASE

LOOK AT THESE SAVINGS ON NEW 370 MEMORY!

	IBM Rental	36 Month FMA Rental	48 Month FMA Rental	60 Month FMA Rental
370/145 Memory				
From 256K to 512K	\$ 3,170	\$1,953	\$1,564	\$1,344
From 512K to 768K	2,680	2,115	1,739	1,512
From 512K to 1024K	5,360	3,600	2,868	2,444
From 1024K to 2048K	11,210	6,412	5,214	4,404
370/158 Memory				
From 1.0 (Mb) to 2.0 (Mb)	\$ 5,720	\$4,436	\$3,624	\$3,061
From 1.5 (Mb) to 3.0 (Mb)	9,670	6,197	5,058	4,272
From 2.0 (Mb) to 3.0 (Mb)	6,810	4,542	3,938	3,364
From 1 (Mb) to 2.0 (Mb) 158-3*	9,720	8,317	6,629	5,704
From 2 (Mb) to 3.0 (Mb) 158-3*	10,810	8,516	6,823	5,962

\* Lease prices include memory and CPU upgrade to 370/158 Model 3.

• YOUR CHOICE OF MANUFACTURER . . . SHORT TERM LEASES . . . SAVE UP TO 50%.

• LEASE PRICES INCLUDE SHIPPING & INSTALLATION, NOT MAINTENANCE, TAXES OR IN-  
SURANCE.

• SIMPLE LEASE DOCUMENTATION . . . 360 IBM & OEM MEMORY AVAILABLE.

CALL OR WRITE  
Richard Forsythe, James McArthur or Jack Air  
FORSYTHE/MCARTHUR ASSOCIATES, INC.  
919 N. Michigan Avenue  
Chicago, Illinois 60611  
(312) 943-3770  
Telex: FMA COMPTX CGO — 255161  
Member Computer Dealers Association



<p>buy sell swap</p> <p><b>MAGNETIC TAPE FOR SALE!!!</b></p> <p>Recertified 100% Guaranteed Trouble Free</p> <p>1600 BPI 2400 feet 3200 FCI 9 track - \$5.47</p> <p>800 BPI 2400 feet full width tested - \$4.97</p> <p>Seals or thin line canisters</p> <p>Call Miss Joan (703) 339-7050</p> <p><b>Precision Methods Inc.</b> 8825 Telegraph Road Lorton, Virginia 22079</p>	<p>buy sell swap</p> <p><b>Unbundled Minis</b> New Data General 2/10 Systems 65K bytes/11.6 megabyte disk system; 132 column-165 cps printer-24 x 80 column CRT; Cabinet &amp; Blower - Factory Warranty</p> <p>\$23,590 in single unit quantities Equivalent Data General Price \$31,200</p> <p>Send or call for multi-system quotes and individual computer and peripheral prices (215) 947-8864 CW Box 4461 797 Washington St. Newton, Mass. 02160 <b>GENERAL DISCOUNT SYSTEMS</b></p>	<p>buy sell swap</p> <p><b>COMPUTER SALES DIVISION</b> 1137 Frito Lay Tower Dallas, Texas 75235 (214) 358-4471 TELEX 73-0955</p>	<p>buy sell swap</p> <p><b>FOR SALE</b></p> <p>IBM 1620 Model II (60K) with 600 lpm Data Products Printer, two 1311 Disk Drives and 1622 Card Read/Punch.</p> <p>For information and bidding, contact Director of Computer Services, Lawrence University, Appleton, Wisconsin, 54911 (414) 739-3681, Ext. 564/565.</p>	<p>buy sell swap</p> <p>On or About September 1, 1975, the Following CDC 3170 System will be declared surplus by the State of Wyoming.</p> <table border="0"> <tr> <td>3174-3</td> <td>Basic Processor</td> </tr> <tr> <td>3172-81</td> <td>Core Memory (5 Modules)</td> </tr> <tr> <td>3177-4</td> <td>Communications Channels</td> </tr> <tr> <td>3158-3</td> <td>Tape Controller</td> </tr> <tr> <td>659-1</td> <td>Tape Drives (4 drives)</td> </tr> <tr> <td>3256</td> <td>Line Printer Controller</td> </tr> <tr> <td>501</td> <td>Line Printer</td> </tr> <tr> <td>3446</td> <td>Card Punch Controller</td> </tr> <tr> <td>405</td> <td>Card Reader</td> </tr> <tr> <td>3553</td> <td>Disk Storage Controller</td> </tr> <tr> <td>841-12</td> <td>Disk Storage Drive (Two Drives)</td> </tr> <tr> <td>871</td> <td>Disk Storage Pack (Five)</td> </tr> <tr> <td>3290</td> <td>Ing/Retrieval Controller</td> </tr> <tr> <td>211-2</td> <td>Display Station (Four)</td> </tr> <tr> <td>218-2</td> <td>Typewriter Station</td> </tr> </table> <p>To obtain additional information and specifications before a call for bids, address inquiries to: State of Wyoming H.D. Allard Manager of Operations Data Services Capitol Building Cheyenne, Wyoming 82002</p>	3174-3	Basic Processor	3172-81	Core Memory (5 Modules)	3177-4	Communications Channels	3158-3	Tape Controller	659-1	Tape Drives (4 drives)	3256	Line Printer Controller	501	Line Printer	3446	Card Punch Controller	405	Card Reader	3553	Disk Storage Controller	841-12	Disk Storage Drive (Two Drives)	871	Disk Storage Pack (Five)	3290	Ing/Retrieval Controller	211-2	Display Station (Four)	218-2	Typewriter Station
3174-3	Basic Processor																																	
3172-81	Core Memory (5 Modules)																																	
3177-4	Communications Channels																																	
3158-3	Tape Controller																																	
659-1	Tape Drives (4 drives)																																	
3256	Line Printer Controller																																	
501	Line Printer																																	
3446	Card Punch Controller																																	
405	Card Reader																																	
3553	Disk Storage Controller																																	
841-12	Disk Storage Drive (Two Drives)																																	
871	Disk Storage Pack (Five)																																	
3290	Ing/Retrieval Controller																																	
211-2	Display Station (Four)																																	
218-2	Typewriter Station																																	
<p>Honeywell 200 For Sale Available Now 32K Memory 5 (20KC) drives 650 LPM Printer Card Reader/Punch Optional paper tape reader. Price \$40,000 make an offer</p> <p>G.V. Wingate (419) 524-6161</p>	<p><b>FOR SALE</b></p> <p><b>VARIAN V-73</b> Dual CPU 8K in each CPU 24K shared 4 Spindal Model 215 Calcomp Disk Drives (2314 Compatible) 1 Tape 9 Track 1600 BPI 1 Card Reader 300 CPM 1 Dataproducts printer 600 LPM 2 ASR-33 TTY Memory Mapping Vortex II Software</p> <p>Call or Write: Datastar Corp. 3400 Republic National Bank Bldg. Dallas, Texas 75201 214-233-7025</p>	<p><b>BUY • SELL • LEASE SYSTEM/3 360-370 PERIPHERALS</b></p> <p><b>I.B.M. DISK DRIVES</b></p> <p>(3) 3330-MOD 1 with (1) 3830 Mod 1 Controller for sale or lease by owner O.P.M. LEASING SERVICES, INC. Mody Weissman (212) 747-0224</p>	<p><b>WANTED BY PRINCIPAL 360/50</b></p> <p>And I/O Set Delivery January 1976 Contact Herb Burnham Total Business Systems P.O. Box 26027 Albuquerque, N.M. 87125 (505) 843-6666</p>	<p><b>SYSTEM/3 360/20 1130</b></p> <p><b>BUY • SELL • LEASE</b></p> <p>For a prompt, competitive quotation on your IBM needs, call or write today. "The Small Systems Specialists" <b>ECONOCOM</b> Economic Computer Sales, Inc. 1255 Lynnfield Road P.O. Box 17825 Memphis, Tenn. 38117 (901) 767-9130 TWX 810-591-1205 Member Computer Dealers Assoc.</p>																														
<p><b>SUPER SALE!! IMMEDIATE DELIVERY!!</b></p> <p>EXTENSION MEMORIES FOR SALE/LEASE</p> <p>System 3 Model 10</p> <p>System 360 Model 22,25,30,40, 44, 50, 65, 67</p> <p>System 370 Model 155, 165</p> <p>Univac Model 1108, 494</p> <p>Available through the following Sales Offices: Chicago 312/437-4116 Dallas 214/661-3155 Denver 303/753-0631 Los Angeles 213/973-0484 Minneapolis 612/935-8811 New York 516/273-8505 Orlando 305/857-1050 Philadelphia 215/643-7512</p> <p><b>FABRITEK INC.</b> 5901 So. County Rd. 18 Minneapolis, Minn. 55436</p>	<p><b>FOR SALE</b></p> <p>DCT-2000 Remote Terminal Card Reader, Printer, Card Punch</p> <p><b>PRICED TO SELL</b></p> <p>Reply to CW Box 4465 797 Washington St. Newton, Mass. 02160</p>	<p><b>FOR SALE</b></p> <p>No Reasonable Offer Refused Honeywell — (4) 273 disk drives features 074 &amp; 079 &amp; controller. Univac 92/93/9400 CPU's &amp; systems including tapes, 8411 &amp; 8414 disks. Wanted for immediate delivery: 3135 channel, 6982 or 6983. 3505-3525 card equipment. The Computer Place 7650 Chippewa Road Brecksville, OH 44141 (216) 526-2080</p>	<p><b>360/30 WE SPECIALIZE</b></p> <p>Will Buy or Sell Any System or Configuration Leases Available CMI Corporation 23000 Mack Avenue St. Clair Shores, Michigan 48080 (313) 774-9500 TWX 810-226-9708 Member Computer Dealers Assoc.</p>	<p><b>COMPUTER TAPE DELIVERED \$6.50</b></p> <p>2400' Seal/Thinline 1600 bpi full certified unconditionally guaranteed CALL COLLECT</p> <table border="0"> <tr> <td>boston (617) 769-4060 new york (212) 867-5661 chicago (312) 266-0100 houston (713) 667-2844 new orleans (504) 522-9295</td> <td>los angeles (213) 887-1040 san francisco (415) 929-1700 dallas (214) 630-4621 indianapolis (317) 244-1891 washington dc (703) 938-5950</td> </tr> </table> <p>easy load - add \$2.00</p>	boston (617) 769-4060 new york (212) 867-5661 chicago (312) 266-0100 houston (713) 667-2844 new orleans (504) 522-9295	los angeles (213) 887-1040 san francisco (415) 929-1700 dallas (214) 630-4621 indianapolis (317) 244-1891 washington dc (703) 938-5950																												
boston (617) 769-4060 new york (212) 867-5661 chicago (312) 266-0100 houston (713) 667-2844 new orleans (504) 522-9295	los angeles (213) 887-1040 san francisco (415) 929-1700 dallas (214) 630-4621 indianapolis (317) 244-1891 washington dc (703) 938-5950																																	
	<p><b>SALE/SWAP</b></p> <p>402 Acctg. Mach. #17531 548 Interpreter #10669</p> <p>Will Swap One or Both For Key Punch Machines or Sell Outright</p> <p>William Baxter MERRILL BANK Bangor, Maine 04401 (207) 945-5651</p>	<p><b>FOR SALE</b></p> <p>Datapoint 2200 Ver. 2 16K Memory</p> <p>Also large quantity spare parts.</p> <p><b>Rondure Co.</b> Stan Shannon 1224 Security Drive Dallas, Texas 75247 (214) 630-4621</p>	<p><b>SALE OR LEASE BURROUGHS 2510</b></p> <p>CPU 40K Printer 860 LPM CARD READER Tape — 4 — 36KB/800 bpi Disk — 10 Million</p> <p>Call or Write: Gus Stamatios Codesco Inc. 1234 Market Street Philadelphia, Pa. 19107 (215) 568-8200</p>	<p><b>FOR SALE OR LEASE 370/158 2 MEG 5 Chan.</b></p> <p>Principals Only Avail. Oct. 75 Make Offer</p> <p>CW Box 4408 797 Washington St. Newton, Mass. 02160</p>																														

**GET IT TOGETHER**

SOFTWARE SUPPORT WITH YOUR COMPUTER LEASE FROM THE WORLD'S LEADING INDEPENDENT SOFTWARE COMPANY.

ALL AVAILABLE IMMEDIATELY WITH I/O SET:

• 360/40H • 360/40G • 2365s • 2361-1

CALL STEVE ELIAS AT (213) 678-0311 OR WRITE TO:

**CSC**  
**COMPUTER SCIENCES CORPORATION**  
650 N. SEPULVEDA BOULEVARD  
LOS ANGELES, CALIFORNIA 90245  
Major Offices and Facilities Throughout the World

**IBM 1401 WITH 1311 DISK**

For Sale  
Also 729 Tape Drives

**D.P. Equipment Marketing Corp.**  
11 Lucon Drive  
Deer Park, L.I. N.Y.  
CALL (516) 667-0200

**WANTED BURROUGHS L SERIES**

TC 500, TC 700  
NCR 31, 32, 41, 42  
481-482

Basic 4 and Philips Systems  
IBM Composers

Call Stuart Rubenstein  
**I.O.A. Data Corp.**  
383 Lafayette St., N.Y. 10003  
(212) 673-9300  
Member Computer Dealers Assoc.

**DECIMUS CORP.**

**NEW LEASE PROGRAMS**  
4&5 Yr. Operating Leases on  
**NEW 370/158 & 370/168**

**1**

**2**

DECIMUS will purchase your presently installed 370 and lease it back

**3**

DECIMUS will take over your present 370/158 lease and upgrade you to a new 370/168 lease

**DICK LANIGAN**  
212-953-0050

**JOHN WANTA**  
713-444-4970



TIME  
FOR  
SALE


texas

THE BEST FOR LESS!  
Best Quality — Less Cost  
VOLUME KEYPUNCHING  
Cards or Magnetic Tape  
COMPUTER TIME  
IBM 360/40 128K  
Rapid Turn-Around  
**Total Business  
Systems, Inc.**  
2303 Smith Street  
Suite 301  
Houston, Texas 77006  
(713) 222-2555

illinois

IBM 360/370 USERS  
COMPUTER TIME  
AVAILABLE  
370/158  
3 meg, 3330 (32m), 2314  
(16m), 12 3420-5 d.d. tape  
OS/VS2, RJE, TSO, ATS, DOS  
emul.  
24 Hours — 7 Days  
370/155  
2 meg, 3330 (16m), 2314 (8m),  
10 3420-5 d.d. tape  
370/135  
240K, 3330 (4m), 2314 (8m), 6  
3420-5 d.d. tape  
360/50  
512K, 2314 (8m), 8 2402-6 d.d.  
tapes  
FOR  
FURTHER INFORMATION  
JIM LaMANTIA  
(312)346-1331  
**computer research  
company**  
200 N. Michigan  
Avenue  
Chicago, Ill. 60601  
Largest Computer Time Sales Co.

washington, d.c.

  
**Litton**

IBM-370/168  
SYSTEM  
VS2 - HASP - TSO  
DOS EMULATION (DUO)  
2-HOURS TURNAROUND  
ALL SYSTEMS  
AVAILABLE  
24-HOURS PER DAY  
LITTON RESTON  
COMPUTER CENTER  
1831 Michael Faraday Drive,  
Reston, VA 22090  
(703) 471-9200

time for sale

new york


WE ARE  
BROKERS OF  
COMPUTER  
TIME  
Computer Reserves, Inc.  
(212) 687-1840

IBM 370/135

384K - DOS/VS Power RJE  
3211, 5-3420's, 14-2314's  
1400 Compatability  
All Shifts Available  
SEATRAN LINES INC.  
1 Chase Manhattan Plaza  
John Rappa  
(212) 964-3400 Ext. 276

SOFTWARE FOR SALE

HOSPITAL FINANCIAL  
SOFTWARE PACKAGES  
Installed and operational in major  
health care facilities nationally.  
Written in ANSI-COBOL. Buy  
proprietary rights or use time-  
sharing. Fully documented.  
• General Ledger — Financial  
Statements  
• Cost Allocation — Any basis,  
Multiple steps  
• Trend Analysis — Statistical  
Unit Costing  
• Budget Comparison and Fore-  
casting  
• Financial Modeling  
• Hospital Data Base System  
• Patient Billing/Accounts Re-  
ceivable  
• Accounts Payable  
• Payroll/Personnel Management  
• Inventory Control  
• Report Generator System  
• Medical Information System  
• Unit Dosage  
Hospital Financial Services, Inc.  
170 NEWPORT CENTER DRIVE  
SUITE 240  
Newport Beach, Calif. 92660  
(714) 644-6411

RPG II  
ACCOUNTING  
SYSTEMS  
PAYROLL  
GENERAL LEDGER  
ACCOUNTS PAYABLE  
INVENTORY  
ACCOUNTS RECEIVABLE  
COMPLETELY DOCUMENTED  
USER TESTED  
IMMEDIATE DELIVERY  
  
Certified Software Products, Inc.  
3140 Harbor Lane North  
Minneapolis Minn 55441  
612-546-6919

time for sale

new york

370/158  
VS2-HASP/RJE, TSO  
DOS Emulation  
Disks-(18) 3330, (3) 2319  
Tapes-(16) 3420 mod. 7  
Printers-(5) 1403, (1) 3211  
Excellent Technical Support  
Very attractive rates on  
all shifts  
Contact: Stu Kerlevsky  
(212) 564-3030  
Datamor  
132 West 31 St.  
New York, N.Y. 10001

Thomas National, Inc.

1775 Broadway, N.Y.C.  
370/158  
DATACENTER  
OS-VS — RJE  
And Other Communications  
Automated Photo Composition  
DOS Emulation  
3330's and 2314's  
Systems and Programming  
Support  
Data Entry Services  
Convenient 57th St. Location  
Open 24 Hours Per Day  
Call (212) 765-8500

TAXBREAK  
\*\*\*  
Payroll tax calculation module  
\*\*\*  
Calculates payroll withholding taxes  
for 50 states, federal, FICA and  
cities. COBOL. \$875 complete.  
Maintenance service on tax changes  
available for \$225 per year.  
ARGONAUT INFORMATION  
SYSTEMS, INC.  
2140 Shattuck Ave.  
# 203  
Berkeley, CA. 94704  
(415) 845-7991

SYSEX  
LOOKING FOR  
SOFTWARE?  
From an active file of over 1200  
Software Suppliers we can help  
you locate quality software pack-  
ages. Write or Call: Tom Weaver.  
Systems Exchange Co.  
1034 Colorado Ave.  
Palo Alto, Calif. 94303  
(415) 328-5490  
Software Suppliers  
We are currently looking for:  
• Dynamic tape library Univac  
1110 EXEC VIII  
• Accounting in Fortran for 32K  
Mini  
• Banking-annual percentage rate  
module IBM/370 Cobol.  
SYSEX

software for sale

AUTOCODER & SPS  
TRANSLATED  
to BAL & PL/1  
THE TOTALTRAN SYSTEM  
1400 Object to clean source  
decompilation  
1400 Clean source to BAL. and  
to PL/1 translation  
Contact: W. Small, President  
CPU MANAGEMENT  
ADVISORY CORP.  
853 Broadway, N.Y. 10003  
(212) 777-7722

MMS  
Accounts  
Receivable  
(Eliminates the  
Long Wait.  
• Database Design—  
All Cobol  
• Open Item or  
Balance Forward  
• Multi-company  
• Flexible Aging  
• Simplified  
Cash Posting  
  
SOFTWARE  
INTERNATIONAL  
Elm Square, Andover, Mass. 01810  
(617) 475-5040

THIS  
MEDICAL BILLING SYSTEM  
... can be a revenue generator for  
you  
You can now have the capability  
of processing doctors, groups, and  
clinics with this complete system  
for billing and insurance pro-  
cessing. The system provides:  
• Complete Insurance Forms  
• Profile, RV5, ICDA Files  
• Bal forward, Ledger  
• All Cobol - DOS or OS  
Occidental Computer Systems  
10202 Riverside Drive  
No. Hollywood, Calif. 91602  
(213) 763-5144

MSA GENERAL LEDGER

  
THE WINNER!  
Over 250 businessmen like you use our system making it the most  
widely used system in the country. They didn't buy it because of any  
sales gimmick or fancy ad, but simply because it is the best commercial  
and manufacturing system available. Its key features are:  
• EFFICIENT REPORT WRITER  
• VARIABLE BUDGETING  
• WORK ORDER & PROJECT  
ACCOUNTING  
• AUTOMATIC ACCRUAL  
REVERSALS  
• CALCULATIONS OF UNIT  
COSTS  
• GRAPHICS  
• STATISTICAL REPORTING  
& ANALYSIS  
• AUDITORS REPORTS  
• CURRENCY CONVERSION  
• COMPREHENSIVE COST  
DISTRIBUTIONS  
• CONSOLIDATED  
REPORTING  
• BUDGETING & RESPONSI-  
BILITY REPORTING  
• TOTAL, IMS COMPATIBILITY  
• ANS COBOL  
WRITE OR CALL WILLIAM M. GRAVES — 404/262-2376  
MANAGEMENT SCIENCE AMERICA, INC.  
3445 PEACHTREE RD., N.E., SUITE 1300, ATLANTA, GA. 30326  
NEW YORK 201/871-4700 CHICAGO 312/323-5940 LOS ANGELES 213/475-9726 HOUSTON (713) 527-0806



## ...Toward the Bottom Line

Mohawk Data Sciences has reached an agreement in principle with a group of banks for a revolving credit agreement that could reach up to \$102.5 million. Under the agreement, which would replace one expiring Oct. 31, the banks would make available a multicurrency borrowing up to \$102.5 million initially, declining to \$83 million at the end of May 1977.

\$\$\$

Decision Data Computer has arranged a \$28 million long-term debt financing program with five banks. Proceeds will finance a domestic leasing subsidiary, retire short-term bank debt and general corporate purposes.

\$\$\$

Nashua decreased its debt in the first half of the year by \$5.6 million for accounts receivables and \$19.6 million for inventory.

\$\$\$

Growth projections at Hewlett-Packard (HP) call for employment to nearly double by 1980, barring unforeseen difficulties, said John Doyle, corporate development director. Minority employment at HP has grown from 11% to 16% in the past five years, said Ray Wilbur, vice-president of personnel.

\$\$\$

Dividend time... Automatic Data Processing raised the annual rate of its dividends to 40 cents a share from 20 cents a share and will pay 10 cents on a quarterly basis on Oct. 1 to shareholders of record Sept. 5.

## MAINTENANCE SALES REPS. WANTED

Representatives with established OEM computer sales for adjunct Computer Maintenance Service line. Territories: Portland-Seattle, San Francisco, Los Angeles, San Diego, Phoenix-Tucson. Write CHS, Box 22234, San Diego, Ca. 92122.

# Net Income for Nine Months Rises 8% at HP

PALO ALTO, Calif. — Hewlett-Packard Co.'s third-quarter earnings were off nearly 12% compared with year-ago figures, but earnings rose 8% in the nine months.

The rate of international orders outpaced domestic orders, rising

18% on the nine months compared with 1.5% for domestic.

"Increasing pressure on profit margins, particularly in pocket-sized calculators, plus order and shipment rates lower than we had anticipated in several other product categories, resulted in

the decline in earnings for the period," President William R. Hewlett said.

Revenues for the third quarter ended July 31 totaled \$245.9 million, compared with \$233.6 million for the year-ago period.

Earnings fell to \$20.3 million

or 73 cents a share from nearly \$23 million or 84 cents a share during the 1974 third quarter.

Revenues for the nine months amounted to \$706.3 million, a 10.5% increase over \$639.2 million in the year-ago period.

Earnings rose 8% to \$62.7 million or \$2.27 a share. This compares with earnings of nearly \$58 million or \$2.14 a share during the first nine months of last year.

Income orders for the quarter rose 6.1% to \$261.9 million compared with \$246.8 million booked in the corresponding period of 1974.

For the nine-month period, orders totaled \$753.2 million, up 9.2% from a year ago when orders were \$689.8 million.

## Pertec Reports Record '75 Profits

EL SEGUNDO, Calif. — Pertec Corp. stemmed the tide of decreasing earnings with record revenues and profits for the year ended June 27. Revenues were up 46% while earnings rose 120% over those of last year, and the fourth quarter set records.

For the year, revenues rose to \$48 million compared with \$32.9 million last year.

Earnings totaled \$2.8 million or 90 cents a share compared with \$1.3 million or 41 cents a share in 1974, when there was a \$1 million charge from discontinued printer operations.

During the fourth quarter, revenues reached \$13.5 million compared with \$9.5 million in the year-ago period, while earnings rose to \$956,000 or 31 cents a share compared with \$880,000 or 29 cents a share.

The 1974 results include \$1.2 million from the sale of the firm's computer-output microfilm operation.

"This year's achievement marks a significant turnaround after three years of progressively declining profits," said President Ryal R. Poppa.

"Our Business Systems Divi-

sion, which was unprofitable last year, recorded dramatic increases in both revenues and profits. Our Peripheral Equipment Division experienced a modest growth rate of 12% which was well below their anticipated revenues, yet was able to achieve almost 100% of their profit expectations," he said.

## Sales Surpass Projections at MAI

NEW YORK — Management Assistance, Inc. (MAI) scored record earnings and revenues for the third quarter and nine months with revenues ahead of the projected 15% to 20% growth rate.

Sales of Basic/Four systems in nine months grew 47% over a year ago to over \$30 million. Backlog for the Basic/Four ex-

ceeded \$14 million, compared with \$11 million at the start of the fiscal year.

Earnings for the third quarter, ended June 20, were \$1.9 million or 7 cents per share compared with \$1.2 million or 4 cents per share for the same period last year.

Revenues for the quarter totaled \$24.3 million, 21% over the \$20 million for last year's third quarter.

Tax credits in the 1975 and 1974 periods amounted to \$818,000 and \$652,000, respectively.

In the nine months, MAI earned \$4.1 million or 14 cents a share compared with \$1.7 million or 6 cents per share last year.

The nine-month period of 1975 reflects a credit of \$928,000 after deducting a \$592,000 write-off of a receivables from Potter Instrument Co., while in 1974 there was a \$1.1 million tax credit.

Revenues rose 23% in the nine months to \$69.1 million compared with \$55.9 million for the same period last year.

Raymond P. Kurshan, chairman and president, said "Both earnings and revenues for the 1975 third quarter exceeded those of the first and second quarters."

"The improvements came from our domestic and foreign activities in sales of Basic/Four sys-

## REI Improves Nine-Month Earnings Despite Special Credit Last Year

DALLAS — Despite a \$2 million special credit last year, Recognition Equipment, Inc. (REI) managed to better earnings during the nine months, when earnings reached \$2.1 million or 36 cents a share compared with \$1.4 million or 26 cents a share in the year-ago period.

Revenues for the nine months rose to \$42.5 million compared with \$28.6 million last year. The \$42.5 million includes \$6.9 million, the value of a Trace system contract installed at First National City Bank. The company said it has essentially no profit impact from these revenues.

However, during the third quarter, although REI's operating income rose to \$509,000

compared with a loss of \$167,000 in the year-ago period, earnings were less than a year ago.

Earned \$733,000

The firm earned \$733,000 or 12 cents a share, including a \$224,000 tax credit, compared with \$2.1 million or 40 cents a share in the year-ago period, when there was the \$2 million gain on restructuring convertible subordinated notes and \$252,000 in tax credits.

Revenues for the three months rose to \$13.5 million compared with \$9.5 million in the year-ago period.

As of July 31, the backlog of firm orders totaled \$41.5 million, including \$858,000 for optical character recognition wands on an if-sold basis, up from \$22.4 million last year.

## Expansions

Honeywell will establish a facility to package integrated circuits located at the Las American Industrial Park in Chihuahua, Mexico.

Burroughs Corp. has purchased an 110,000 sq ft plant for the manufacture and engineering of its Series S document-handling systems in Wayne Township, Mich. The plant will provide the space needed for expansion of the Series S program and will provide additional space at the Plymouth plant for expansion of the Series L and Series TC programs.

Dataproducts Corp. has opened a 35,000 sq ft addition to assemble and manufacture printers for the European market in Dublin, Ireland.

Control Data Corp. has begun construction on its first European Cybernet computer center which will house two CDC Cyber 70 Model 73s and two IBM 370/158s. It will be located in Brussels, Belgium.

Versatec has moved to larger facilities in Santa Clara at the intersection of Kifer Road and Bowers Ave. The \$4 million building of over 100,000 sq ft will house up to 500 employees.

Tymshare, Inc. has moved into larger headquarter facilities at 20705 Valley Green Drive, Cupertino, Calif. 95014.

Entrex, Inc. has leased space at 10010 Santa Monica Blvd. in Los Angeles for a sales and training office.

**VOLUME  
KEY PUNCHING**  
(402) 592-1686

**"QUALITY  
AT  
LOWER  
COST"**

**AMERICAN  
KEY PUNCH**  
4345 South 89th St.  
Omaha, Nebraska 68127

**AUSTRALIA**

Authentic information is freely available **WITHOUT CHARGE** from the Australian Embassy in Washington, D.C. (202) 797-3000, and the Australian Consulate General in New York (212) 245-4000, San Francisco (415) 362-6160, Los Angeles (213) 380-4610 and Chicago (312) 329-1740.

**MINICOMPUTER COMPILER  
COBOL**

- Multiuser
- On-Line
- Multi-Processing
- Key To Disk
- Interactive
- Multi-branch
- Conversational
- Multi-programming

**IPI** 6237 Edgewater Dr.  
Orlando, FL 32810  
Marketing (305) 293-9431

**ANS 1974 BLIS/COBOL**

**FOR SALE  
Communication  
Terminals**

- Teletypes - 28 32 33 35
- TWX - TELEX
- DECwriters LA36
- Acoustic Couplers & Hardwire Modems

**DATA COMMUNICATION  
EQUIPMENT BROKERS, INC.**  
1878 Thunderbird Street  
Troy, Michigan 48064  
(313) 362-0470

PRINT BOUND? SHORT TERM RENTALS

**OFF LINE DATA PRODUCTS 4000  
SATELLITE PRINT STATIONS**

- 1333 LPM
- PRINTS FROM ANY 7 or 9 TRACK TAPES

**\$950 A MONTH  
FOR 3 MONTHS**

**AMERICAN USED COMPUTER CORP**  
Box 68 Kenmore Sta. Boston, MA 02215 617-261-1100  
Member Computer Dealers Association

**Find minicomputer software services  
FAST**  
in the new 1975 Minicomputer Software Directory

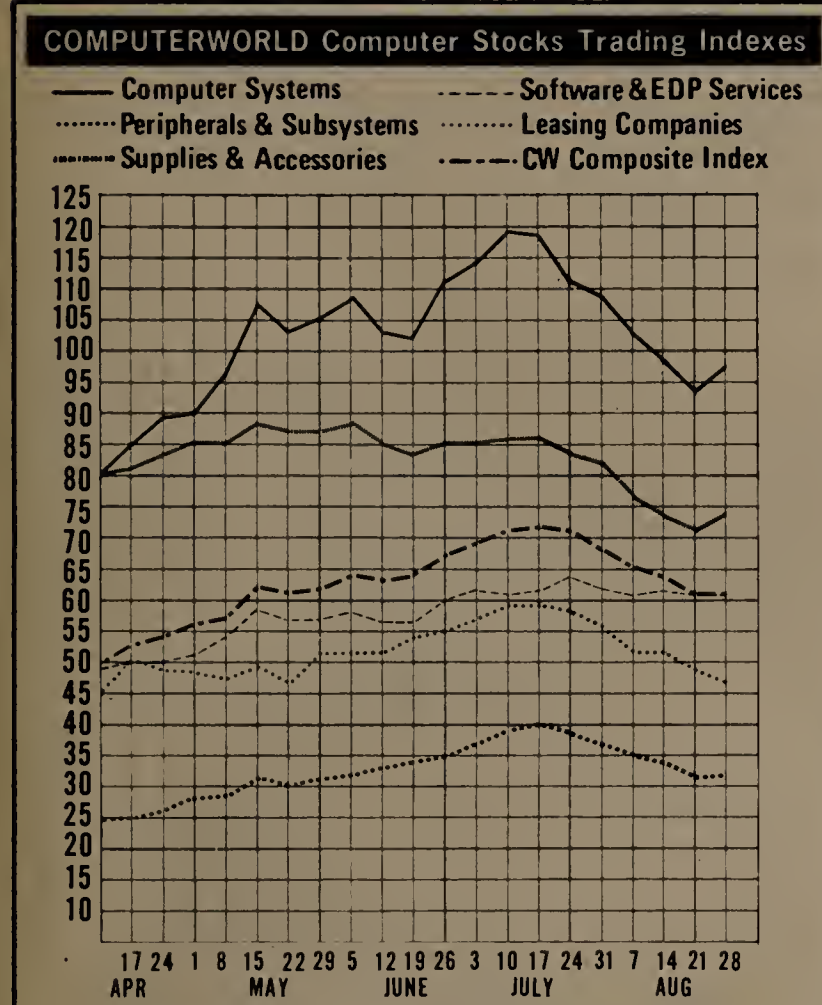
Designed for professionals by professionals, the 1975 Minicomputer Software Directory is a primary source for locating services and application packages currently available for the minicomputer user. Directory sections provide supplier company profiles, an alphabetic services/application index, supplier geographic locator and CPU's supported by listed suppliers. An invaluable source book for those in the minicomputer industry who want to know or be known, the Minicomputer Software Directory is available now at an annual subscription price of \$45, including two 1975 updates.

Send your check or purchase order to: Minicomputer Data Services,  
20 Coventry Lane, Riverside, CT 06878  
Suppliers, send for listing information kit.



Earnings Reports

COMPUTER SCIENCES				COMPUTER INVESTORS GROUP				DATA CARD			
Three Months Ended June 27				Year Ended March 31				Three Months Ended June 28			
	1975	1974		1975	1974				a1975	b1974	
Shr Ernd	\$1.11	\$0.04		Revenue	\$28,682,000	\$23,231,000		Shr Ernd	\$0.17	\$0.17	
Revenue	50,367,000	39,733,000		Spec Cred	306,000	.....		Revenue	3,184,000	1,929,000	
Earnings	1,524,000	585,000		Loss	4,230,000	1,812,000		Earnings	263,000	251,000	
INTEL				WAVETEK				a-Includes operations of Troy division acquired in May. b-Restated to reflect accounting changes.			
Three Months Ended June 30				Three Months Ended July 5				DATA DISC			
	1975	1974		1975	1974			Three Months Ended July 4	1975	1974	
Shr Ernd	\$0.52	\$1.00		Shr Ernd	\$0.14	\$0.13		Shr Ernd	\$0.03	\$0.02	
Revenue	31,501,000	36,223,000		Revenue	2,434,300	2,366,700		Revenue	1,812,000	2,564,000	
Earnings	3,613,000	6,701,000		Earnings	119,700	108,000		Earnings	30,000	20,000	
6 Mo Shr	1.06	1.99		9 Mo Shr	.29	.53		6 Mo Shr	.....	.19	
Revenue	61,866,000	68,709,000		Revenue	7,398,100	7,692,000		Revenue	3,499,000	4,949,000	
Earnings	7,305,000	13,304,000		Earnings	247,600	454,300		Earnings	(66,000)	195,000	



LITRONIX			
Three Months Ended June 29			
	1975	1974	
Shr Ernd	\$0.10	.....	
Revenue	13,332,000	\$8,698,000	
Earnings	252,000	(35,000)	
6 Mo Shr	.17	.02	
Revenue	23,663,000	15,446,000	
Earnings	433,000	41,000	
MACRODATA			
Three Months Ended June 30			
	1975	1974	
Shr Ernd	.....	\$0.24	
Revenue	\$2,877,471	3,258,257	
Earnings	(56,837)	238,530	
6 Mo Shr	.11	.46	
Revenue	5,885,980	6,258,333	
Earnings	117,887	416,919	
TALLY			
Three Months Ended June 29			
	1975	1974	
Shr Ernd	\$0.09	\$0.06	
Revenue	5,439,000	4,300,000	
Tax Cred	20,000	41,000	
Earnings	205,000	162,000	
6 Mo Shr	.10	.11	
Revenue	9,871,000	8,454,000	
Tax Cred	55,000	73,000	
Earnings	233,000	287,000	
MODULAR COMPUTER SYSTEMS			
Three Months Ended June 30			
	1975	1974	
Shr Ernd	\$0.20	\$0.18	
Revenue	9,034,000	6,056,000	
Earnings	594,000	485,000	
6 Mo Shr	.38	.32	
Revenue	17,706,000	11,012,000	
Tax Cred	.....	188,000	
Earnings	1,141,000	1,076,000	

# Computerworld

## Sales Offices

**Vice President — Marketing**  
*Neal Wilder*

**Sales Administrator:**  
*Dottie Travis*

**COMPUTERWORLD**  
797 Washington Street  
Newton, Mass. 02160  
Phone: (617) 965-5800  
Telex: USA-92-2529

**Northern Regional Manager**  
*Robert Ziegel*

**Account Manager**  
*Mike Burman*

**COMPUTERWORLD**  
797 Washington Street  
Newton, Mass. 02160  
Phone: (617) 965-5800  
Telex: USA-92-2529

**Eastern Regional Manager**  
*Donald E. Fagan*

**Account Manager**  
*Frank Gallo*

**COMPUTERWORLD**  
2125 Center Avenue  
Fort Lee, N.J. 07024  
Phone: (201) 461-2575

**Western Regional Manager:**  
*Bill Healey*

1212 Hearst Bldg.  
San Francisco, Calif. 94103  
Phone: (415) 495-0990

**Japan:**  
*Ken Suzuki*

**General Manager**  
Dempa/Computerworld  
1-11-15 Higashi Gotanda  
Shinagawa-ku, Tokyo 141  
Phone: (03) 445-6101  
Telex: Japan-26792

**United Kingdom:**  
*Michael Young*

**Computerworld Publishing Ltd.**  
140-146 Camden Street  
London NW1 9PF, England  
Phone: (01) 485-2248  
Telex: UK-26-47-37

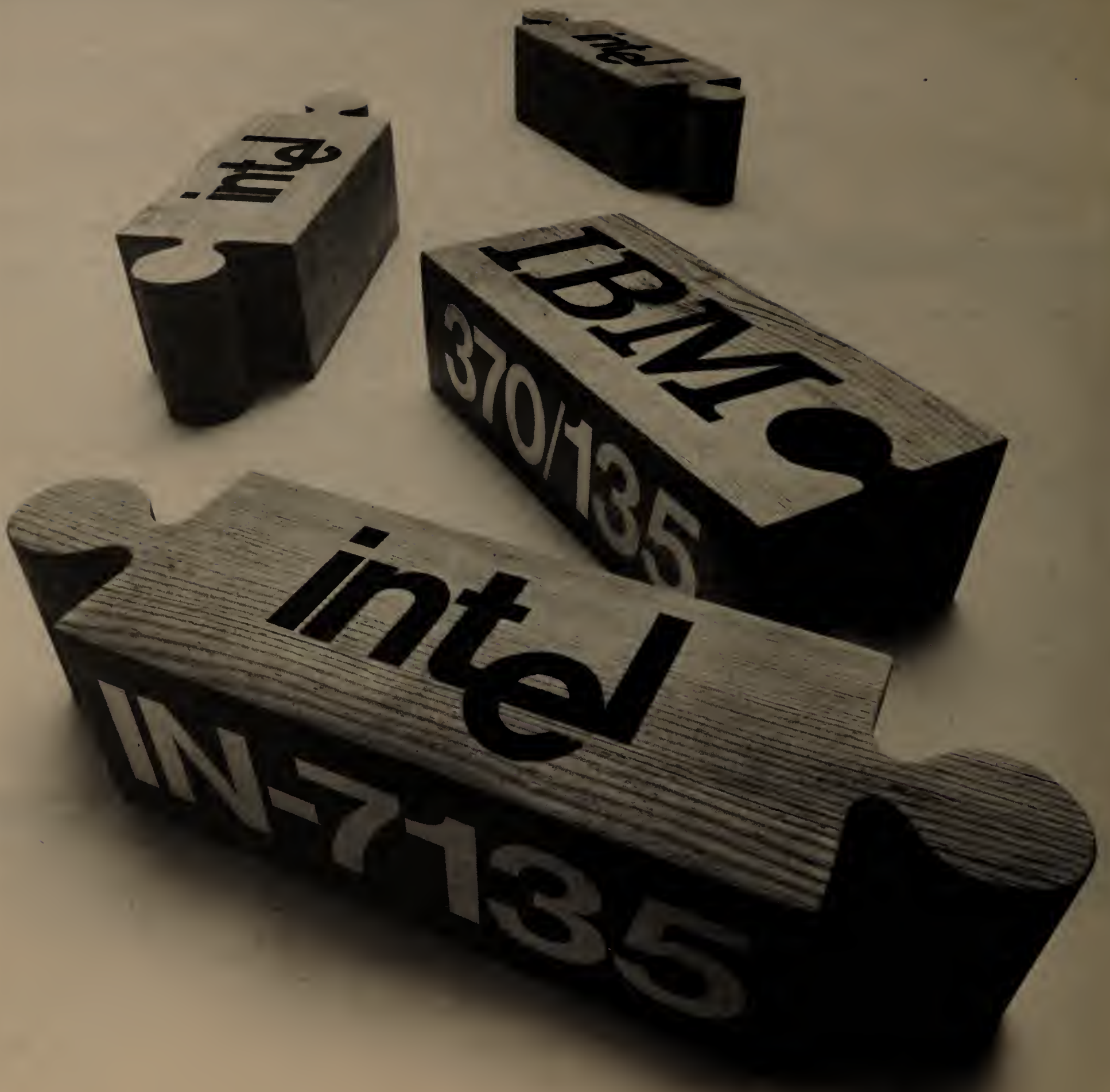
**West Germany:**  
*Otmar Weber*

**Computerworld GmbH**  
8000 Munich 40  
Tristanstrasse 11  
West Germany  
Phone: (089) 36-40-36  
Telex: W.Ger-5-215350-HKFD

Computerworld Stock Trading Summary										All statistics compiled, computed and formatted by TRADE*QUOTES, INC. Cambridge, Mass. 02139									
CLOSING PRICES WEDNESDAY, AUGUST 27, 1975																			
TRADE*QUOTES																			
PRICE										PRICE									
1975 CLOSE WFEK WFEK RANGE AUG 27 NET PCT (1) 1975 CHNGE CHNGE										1975 CLOSE WFEK WFEK RANGE AUG 27 NET PCT (1) 1975 CHNGE CHNGE									
COMPUTER SYSTEMS										SOFTWARE & EDP SERVICES									
N BURROUGHS CORP	62-109	88 5/8	+1 1/4	+1.4						O ADVANCED COMP TECH	1- 1	1	0	0.0					
O COMPUTER AUTOMATION	2- 10	8	+ 1/2	+6.6						A APPLIED DATA RES.	1- 10	1 3/4	0	0.0					
N CONTROL DATA CORP	11- 23	16 1/4	+1	+6.5						N AUTOMATIC DATA PROC	29- 65	51 5/8	+1 5/8	+3.2					
N DATA GENERAL CORP	10- 38	27 1/4	+1 5/8	+6.3						O BRANDON APPLIED SYST	1- 1	1/4	0	0.0					
O DATAPoint CORP	6- 26	17 3/4	+1 1/4	+7.5						O CENTRAL DATA SYSTEMS	3- 7	6 1/2	0	0.0					
O DIGITAL COMP CONTROL	1- 4	3 1/4	0	0.0						O COMPUTER DIMENSIONS	2- 6	4	- 1/4	-5.8					
N DIGITAL EQUIPMENT	46-122	110 5/8	+4 1/8	+3.8						O COMP ELECTION SYSTMS	3- 6	5 1/4	0	0.0					
N ELECTRONIC ASSOC.	2- 3	2 3/8	+ 1/8	+5.5						O COMPUTER HORIZONS	1- 1	3/4	- 1/8	-14.2					
A ELECTRONIC ENGINEER.	5- 13	8 5/8	+ 3/8	+4.5						O COMPUTER NETWORK	1- 3	2 3/8	0	0.0					
N FOXBORO	23- 42	30 3/4	+ 3/4	+2.5						N COMPUTER SCIENCES	2- 6	4 1/2	+ 3/8	+9.0					
O GENERAL AUTOMATION	6- 14	6 7/8	-1 1/4	-15.3						O COMPUTER TASK GROUP	1- 1	5/8	0	0.0					
O GRI COMPUTER CORP	1- 1	5/8	+ 1/8	+25.0						O COMPUTER USAGE	2- 4	2 3/8	+ 1/8	+5.5					
N HEWLETT-PACKARD CO	58-120	92 1/2	-6 5/8	-6.6						O COMSHARE	3- 4	2 3/4	- 1/8	-4.3					
N HONEYWELL INC	22- 40	28 1/8	+1 1/4	+4.6						O DATATAB	1- 2	1 3/4	0	0.0					
N IBM	158-224	181	+4 1/2	+2.5						A FLECT COMR PROG	1- 1	1/4	0	0.0					
O MEMOREX	1- 10	7	- 5/8	-8.1						N FLECTRONIC DATA SYS.	12- 28	18 1/4	+ 7/8	+5.0					
O MICRODATA CORP	2- 6	4 5/8	+ 1/8	+2.7						O INFONATIONAL INC	1- 1	1/8	0	0.0					
O MODULAR COMPUTER SYS	5- 19	10 1/2	-1 1/2	-12.5						O IPS COMPUTER MARKET.	1- 1	3/4	0	0.0					
N NCR	15- 39	26 7/8	+1 1/2	+5.9						O KEANE ASSOCIATES	2- 3	2 1/4	0	0.0					
O PRIME COMPUTER INC	2- 6	5	0	0.0						O KEYDATA CORP	2- 3	2 1/2	- 1/8	-4.7					
N REPKIN-ELMER	16- 30	23 1/2	+1 3/8	+6.2						O LOGICON	3- 5	3 5/8	0	0.0					
N RAYTHEON CO	26- 59	49 3/4	+2 1/8	+4.4						A MANAGEMENT DATA	1- 3	1 3/4	- 3/8	-17.6					
N SINGER COMPANY	10- 17	12 1/4	+ 7/8	+7.6						O NATIONAL CSS INC	6- 14	12	+1 3/4	+17.0					
N SPERRY RAND	26- 49	40 1/4	+ 1/2	+1.2						O NATIONAL COMPUTER CO	1- 1	1/8	0	0.0					
A SYSTEMS ENG. LABS	1- 5	3 1/8	0	0.0						A ON LINE SYSTEMS INC	3- 17	13 1/4	+ 1/2	+3.9					
O ULTIMACC SYSTEMS INC	1- 6	5 5/8	0	0.0						N PLANNING RESEARCH	2- 6	3 7/8	0	0.0					
N VARIAN ASSOCIATES	7- 19	13 3/8	+ 7/8	+7.0						O PROGRAMMING & SYS	1- 1	5/8	0	0.0					
N WANG LABS.	7- 17	11 3/4	+ 1/4	+2.1						O RAPICATA INC	2- 5	3 5/8	+ 1/8	+3.5					
N XEROX CORP	51- 86	58	+5	+9.4						O REYNOLDS & REYNOLD	10- 24	11	-1	-8.3					
LEASING COMPANIES										O SCIENTIFIC COMPUTERS	1- 1	1	0	0.0					
O COMDISCO INC	1- 5	3 3/8	0	0.0						O SIMPLICITY COMPUTER	1- 1	3/4	0	0.0					
A COMMERCE GROUP CORP	2- 4	3	0	0.0						O TYMSHARE INC	7- 21	16 3/8	+1 3/8	+9.1					
A COMPUTER INVSTRS GRP	1- 2	3/4	0	0.0						A URS SYSTEMS	2- 4	3	- 1/2	-14.2					
M DATRONIC RENTAL	1- 1	1/2	0	0.0						N WYLY CORP	2- 4	3	0	0.0					
A DCL INC	1- 1	1/2	0	0.0						PERIPHERALS & SUBSYSTEMS									
N DRF INC	3- 6	4 1/2	- 1/8	-2.7						N ADDRESSOGRAPH-MULT	4- 9	6 1/2	+ 7/8	+15.5					
O EDP RESOURCES	1- 2	1	0	0.0						O ADVANCED MEMORY SYS	1- 7	4	+ 5/8	+18.5					
A GRANITE MGT	1- 5	3 1/2	+ 1/4	+7.6						N AMPLEX CORP	3- 7	5 1/8	+ 3/8	+7.8					
A GREYHOUND COMPUTER	2- 3	2 7/8	0	0.0						O ANDERSON JACOBSON	1- 3	1 7/8	- 1/2	-21.0					
A ITTEL	3- 9	5 7/8	+ 1/8	+2.1						O BEHVIE MEDICAL ELEC	1- 5	3	- 1/8	-4.0					
N LEASCO CORP	4- 8	6	- 1/8	-2.0						A BOLT,BFRANEK & NEF	5- 13	10	+ 7/8	+9.5					
O LEASPAC CORP	1- 1	1/4	0	0.0						N BUNKER-RAMO	4- 8	4 5/8	0	0.0					
O LECTRO MGT INC	1- 1	1/8	0	0.0						A CALCOMP	4- 7	4	- 1/4	-5.8					
O NRG INC	1- 4	2 3/8	- 3/8	-17.6						O CAMBRIDGE MEMORIES	3- 5	3 3/4	- 1/8	-3.2					
A RIONEER TEX CORP	2- 7	5	- 1/4	-4.7						N CENTRONICS DATA COMP	7- 25	15 1/4	- 3/4	-4.6					
A ROCKWOOD COMPUTER	1- 1	1/4	- 3/8	-60.0						O CODEX CORP	15- 38	29 1/4	+2 3/4	+10.3					
N U.S. LEASING	8- 14	8 7/8	+ 5/8	+7.5						O COGNITRONICS	1- 2	1 1/8	0	0.0					
SUPPLIES & ACCESSORIES										O COMPUTER COMMUN.	1- 2	1	0	0.0					
O BALTIMORE BUS FORMS	4- 5	4 1/2	+ 1/4	+5.8						O COMPUTER CONSOLFS	3- 7	4 1/4	-1 1/4	-22.7					
A BARRY WRIGHT	5- 7	6 1/4	- 1/4	-3.8						A COMPUTER EQUIPMENT	1- 2	1 3/4	+ 1/4	+16.6					
O CYBERMATICS INC	1- 1	1/2	0	0.0						O COMPUTER MACHINEPY	1- 2	1 3/4	+ 1/8	+7.6					
A DATA DOCUMENTS	29- 42	34	+2 1/8	+6.6						O COMPUTER TRANSCIEVER	1- 2	1 1/8	0	0.0					
O DUPLEX PRODUCTS INC	12- 25	16	+1 1/2	+7.5						O COMTEN	2- 5	3 1/2	- 1/4	-6.6					
N ENNIS BUS. FORMS	5- 7	5 1/8	- 1/8	-7.3						TRADE*QUOTES, INC. Cambridge, Mass. 02139									
O GRAHAM MAGNETICS	5- 10	8 1/4	+1	+13.7															
O GRAPHIC CONTROLS	8- 21	11 1/2	+1	+9.5															
N 3M COMPANY	43- 68	53 3/4	+2 1/4	+4.3															
O MOORE CORP LTD	39- 51	43 3/4	+1 1/2	+3.5															
N NASHUA CORP	11- 22	12 1/4	+ 5/8	+5.3															
O STANORD REGISTER	11- 20	15 3/4	+ 1/4	+1.6															
O TAR PRODUCTS CO	4- 8	5 3/4	0	0.0															
N UAPCO	17- 24	19 3/4	- 1/4	-1.7															
O VANIER GRAPHICS CORP	4- 7	4 3/4	0	0.0															
A WABASH MAGNETICS	3- 5	4	+ 1/8	+3.2															
N WALLACE BUS FORMS	15- 25	18 1/8	- 1/4	-1.3															

EXCH: N=NEW YORK; A=AMERICAN; P=PHIL-PAUL-WASH  
L=NATIONAL; M=MIDWEST; O=OVER-THE-COUNTER  
O-T-C PRICES ARE BID PRICES AS OF 3 P.M. OR LAST BID  
1) TO NEAREST DOLLAR





## One good name deserves another.

DIRECT FROM INTEL. Nothing succeeds like success. IBM in computers. Intel in semiconductor memories.

It all started back in 1968 when we began to build a business on semiconductor memory technology. It's worked out pretty well. We're now an international company with revenues well over 100 million dollars, and the recognized leader in semiconductor memories.

Until recently all of the plug compatible, add-on memory systems we have manufactured for the IBM 370/135, 370/145 and 370/158 central processor systems have been marketed by third parties. Now we are selling direct so you can buy or lease from the same company that manufactures and services your add-on memory. You'll continue to get Intel performance and quality with further cost savings.

**S 370/135 MAIN MEMORY.** The Intel IN-7135 add-on memory system for the 370/135 offers performance you can't get anywhere else. Like expansion to one megabyte in the same small, compact, swingout frame. That's twice the capacity available from IBM. The unique swinging door packaging approach means you can add that one megabyte of CPU main memory without taking up any additional space, beyond the required IBM service area. You can also reconfigure blocks of memory and replace failing portions of IBM memory. And all our IBM 370/135, 370/145, 370/158 add-on memory systems are fully field upgradable.

For more information call any of our sales offices listed below or write: Intel Memory Systems, 1302 North Mathilda Avenue, Sunnyvale, California 94086, (408) 734-8102.

**intel memory systems**  
A DIVISION OF INTEL CORPORATION